

APPENDIX II

TAB B

In The Matter Of:

*Tammy Kitzmiller, et al. v.
Dover Area School District, et al.*

Michael Behe

May 19, 2005

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**Tammy Kitzmiller, et al. v.
Dover Area School District, et al.**

**Michael Behe
May 19, 2005**

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA
TAMMY KITZMILLER, et al.,
Plaintiffs, CIVIL ACTION NO. 04-CV-2688
vs.
DOVER AREA SCHOOL DISTRICT, (JUDGE JONES)
et al.,
Defendants
Deposition of: : MICHAEL BEHE
Taken by : Plaintiffs
Date : May 19, 2005, 9:00 a.m.
Before : Vicki L. Fox, RMR,
Reporter-Notary
Place : 200 One Keystone Plaza
North Front and Market Streets
Harrisburg, Pennsylvania
APPEARANCES:
PEPPER HAMILTON LLP
BY: ERIC ROTHSCHILD, ESQUIRE
For - Plaintiffs
THOMAS MORE LAW CENTER
BY: EDWARD L. WHITE, III, ESQUIRE
For - Defendants

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(1) STIPULATION
(2) It is hereby stipulated by and between the
(3) respective parties that sealing, certification and filing
(4) are waived; and that all objections except as to the form
(5) of the question are reserved until the time of trial.
(6) MICHAEL BEHE, called as a witness, being duly
(7) sworn, was examined and testified, as follows:
(8) BY MR. ROTHSCHILD:
(9) Q: Good morning, Professor Behe.
(10) A: Good morning.
(11) Q: How would you like me to address you during the
(12) deposition?
(13) A: You can call my Mike.
(14) Q: Likewise, you can call me Eric. My name is Eric
(15) Rothschild. I have introduced myself off the record,
(16) but let me do so on the record.
(17) I am an attorney from Pepper Hamilton LLP which is
(18) based in Philadelphia and also has this office in
(19) Harrisburg. I represent the parents who are plaintiffs
(20) in the lawsuit captioned Kitzmiller, et al. versus the
(21) Dover Area School District and School Board, and your
(22) deposition is being taken in that matter.
(23) Do you understand that?
(24) A: Yes, I do.
(25)

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Q: Have you ever served as an expert witness before in litigation?

A: No, I haven't.

Q: Have you ever been deposed before?

A: No, I haven't.

Q: Have you testified at a trial before?

A: Once a long time ago in college when my car was stolen, I did.

Q: I am sure you are aware that there are proceedings going on in front of the State of Kansas School Board.

Do you have any involvement with that?

A: Yes, I testified before them last week.

Q: Did you testify under oath?

A: No.

Q: Have you ever given any testimony similar to that where you are in front of a School Board or a State Standards Board?

A: A few years back, I testified in front of the Pennsylvania — I think it was the State Senate's Subcommittee on Education or something. They were considering science standards. I gave a five-minute or so statement.

Q: Do you have a copy of that statement?

A: Not with me. I think I have got it somewhere. Maybe on my computer somewhere.

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MR. ROTHSCHILD: Counsel, I would request that that be produced.

MR. WHITE: Tell me exactly what you want.

MR. ROTHSCHILD: What Michael just described, which is any written record of his testimony before the Pennsylvania Legislature about state science standards.

A: I think it is on the Internet somewhere, too. Virtually I've ever said is on the Internet.

BY MR. ROTHSCHILD:

Q: I know you have done a fair amount of public speaking and also have been involved in quite a few debates relating to the issues that are in dispute in this litigation. The deposition process is a little different than those kind of proceedings.

What is going to happen is I am going to ask you questions, and you are going to answer verbally — answer my questions verbally. Things that would suffice in ordinary conversation like nods of the head or expressions that are not true words won't make a clear record in the transcript. So I would ask that you answer all of my questions verbally.

Do you understand that?

A: Sure.

Q: Good start. The other thing that we need to keep in mind for the benefit of the court reporter, as well as

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(1) creating a clear record, is that you need to wait until (2) I finish my questions before you answer. Often you will (3) be able to anticipate where I am going and be eager to (4) answer, which in normal conversation we do all the time, (5) but in this process I need you to wait until my question (6) is done and then answer.

Do you understand that?

A: Sure.

Q: Similarly, I will endeavor to do the same for you, not cut off your answers in order to go on to my question. If I should ever fail to do it and you have more to say, please let me know, and I will, of course, let you finish.

A: Okay.

Q: The other thing that is going to probably occur in this deposition is that we are going to be using a lot of big words and sometimes be reading out of passages in your report or your one of your writings. When that happens, a couple of things are going to happen.

We are going to have a lot of big words flying around, and also when we read from writings, we tend to speed up. Vicki knows that that is one of my major shortcomings as a deposing attorney.

For the benefit of the court reporter and the clarity of the transcript, let's try and take our time

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(1) getting our questions and answers out so she can get a (2) clear record. And I am sure she will admonish at least (3) me if I fail to do so.

A: Okay.

Q: I will be honest with you. This is going to be a long day. We have a lot of ground to cover. Mr. White is going to have to work hard paying attention. Everybody else will primarily will be sitting and watching, but you and I are going to be working hard.

At any time during the proceedings if you need a break just to clear your head, use the facilities, to talk to Mr. White, please go ahead and let me know, and I'm happy to take a break. I may initiate some myself.

A: Okay.

Q: Do I understand correctly that you are represented by counsel at this deposition?

A: I am not quite sure actually. Are you my counsel?

MR. WHITE: Based on the stipulation, yes.

BY MR. ROTHSCHILD:

Q: Did you do anything to prepare for this deposition?

A: I read over my expert report. I read over the rebuttal analysis that I submitted to for Kevin Padian and his report and Ken Miller's report as well. That is pretty much it.

Q: When were you retained by defendants to be an expert in

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(1) this litigation?

(2) A: I think it was earlier in the year. Maybe January,
(3) February. I am not quite sure to tell you the truth.

(4) Q: What were you asked to do?

(5) A: I was asked — initially, they just called me and spoke
(6) with me about the case and got — asked me some
(7) questions. Again, I forget exactly what they were.

(8) Then I was asked if I would be an expert witness
(9) and prepare a statement on a couple of questions that
(10) Mr. Richard Thompson of the Thomas More Law Center asked
(11) me to address. And then they said that I would probably
(12) be a witness at trial and so on.

(13) Q: What were the questions you were asked to answer?

(14) MR. WHITE: I object. Just clarify for me the
(15) stipulation you have with Pat Gillen regarding what you
(16) are allowed to inquire into between conversations with
(17) Professor Behe and the Thomas More Law Center.

(18) MR. ROTHSCHILD: The only stipulation we had was
(19) we were not going to require the production of draft
(20) reports or e-mails, written communications to counsel.

(21) There is no stipulation other than that. Just so
(22) you understand, Ed, I am not going to be asking about
(23) every communication with counsel. I just want Mike's
(24) understanding of what he was supposed to do as part of
(25) his expert retention.

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(1) MR. WHITE: My understanding from Pat Gillen is
(2) that this agreement with you and Pat dealt also with
(3) communications with counsel.

(4) MR. ROTHSCHILD: That is not part of the
(5) stipulation. I think it is clear I am entitled to know
(6) what Professor Behe understood he was supposed to do as
(7) an expert here. I am not going to be asking the back
(8) and forth of what did they ask you to change in your
(9) report and the like.

(10) I think I am entitled to understand as part of
(11) what he did in his report what he understood he was
(12) supposed to be doing.

(13) MR. WHITE: I am just trying to understand what
(14) the parameters are. I will go with what you just told
(15) me.

(16) A: If I could see my own expert report there, essentially
(17) what he asked me to address are the headings of the
(18) sections.

(19) BY MR. ROTHSCHILD:

(20) Q: I am going to mark as Behe Exhibit 3 your expert report
(21) — your initial expert report in the matter along with
(22) its exhibits. Our legal assistant has put that in a
(23) nice binder so it will be easy to hold today.

(24) MR. ROTHSCHILD: Ed, I have a could for you, too.
(25) (Behe Exhibit 1 was marked.)

BY MR. ROTHSCHILD:

(1) Q: Professor Behe, do you recognize the document we have
(2) marked as Exhibit 1 as a bound version of the expert
(3) report you filed in this matter along with the exhibits?

(4) A: Yes. That is what it looks like.

(5) Q: That includes at the front of the report your curriculum
(6) vitae?

(7) A: That's correct. He asked me to address a couple of
(8) points. Section one is how theory is used in the
(9) scientific community. And whether or not intelligent
(10) design is a scientific theory, he asked me to address
(11) that question.

(12) And section three, whether it is Creationism or
(13) not, he asked me to address that question. And section
(14) three, what are the gaps and problems with Darwin's
(15) Theory of Evolution, he asked me to address that.

(16) The origin of life, he asked me to talk about
(17) that. The scientific controversy over intelligent
(18) design, he asked me to address that, which is section
(19) five in the report. And the utility of design, he asked
(20) to address something like that as a scientific theory.

(21) Q: When you completed this report, did you understand that
(22) it would include all the subject matter that you would
(23) testify about at trial?

(24) A: Yes, he told me that.

(1) Q: Is there any subject matter that is not included in your
(2) expert report that you now expect to testify about at
(3) trial?

(4) A: Yeah. Well, I expect — although, I don't know how such
(5) things work — that I would be asked about my rebuttal
(6) analysis of Kenneth Miller and Kevin Padian and stuff
(7) that is in there. There are some things in there that
(8) aren't in the expert report.

(9) Q: Have you read the expert reports of the other experts
(10) retained by defendants, meaning your side in the case?

(11) A: Yes, I did.

(12) Q: All of them?

(13) A: Yes.

(14) Q: And did you read any of them in draft form?

(15) A: No.

(16) Q: Have you read the rebuttal reports prepared by other
(17) experts for defendants in this case?

(18) A: The rebuttal reports to the people on our side?

(19) Q: No, rebuttals by experts for defendants to the experts
(20) for plaintiffs. Similar to what you did with Padian and
(21) Miller.

(22) A: No, I have read no rebuttal reports of anybody.

(23) Q: Is there anything stated in the reports by defendants'
(24) experts — and again, that is your side —

(25) A: That is me, okay.

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Q: — that you disagreed with?
A: Well, to tell you the truth, I just skimmed them and did not go over them in sufficient detail that I would say that I agreed with everything. I didn't see any large red flags, but I wouldn't make a blanket statement that I agreed with everything.
Q: In the process of preparing your own expert report, either the initial report or the rebuttals, did you ever speak to anybody in the Dover community?
A: No.
Q: You have made a presentation to a large group of people in the Dover community; correct?
A: That's correct.
Q: Other than that presentation, have you had any interactions with individuals in the Dover community?
A: Well, one time, I sent a letter — faxed a letter to Richard Nilsen, who is the Superintendent I suppose of the District. I did so at the request of folks at the Discovery Institute essentially advising Richard Nilsen to listen to the folks at Discovery and follow their advice.
Q: When did you send that letter?
A: I'm not quite sure. This is May. A couple of months ago I guess before. It might have been in January. I would have to check.

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Q: Do you have a copy of that letter?
A: It is probably on my computer.
MR. ROTHSCHILD: Ed, this is something we haven't received, and I think it's extremely relevant. I am surprised I haven't — this is the first time I am hearing about it. I am requesting immediate production of that document.
A: I haven't told anybody else about that. Nobody asked me about it.

BY MR. ROTHSCHILD:

Q: To the best of your recollection, what was stated in that letter?
A: Well, essentially that Discovery Institute has experience in handling controversies about the teaching of evolution, and they might have good advice for him to follow. Essentially saying he should listen to what they have to say.
Q: Do you recall whether this letter you sent was sent before or after the lawsuit was filed? I can tell you that was in mid December, December I think 14th.
A: I do not know. I am afraid I don't remember.
Q: Was there any particular kind of advice you were urging Dr. Nilsen to consider from the Discovery Institute?
A: No. As I recall — and I am 53 now so I don't recall so well — but I was actually contacted by folks in the

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Discovery who said that Dr. Nilsen respected my work and that would I contact them, and would I contact him and ask him to listen to what they had to say.
And if I recall again correctly — I'm not sure — I said something like well, you know, I don't like to contact people who haven't asked me for advice. But I said if you want to draft a letter in my name, I will send it over to him.
So I believe somebody at Discovery — again, I am not sure who — whether it was Jay Richards or John West or somebody actually composed the letter, and I simply faxed it to him.
Q: Who was the person who contacted you asking you to contact Dr. Nilsen?
A: Again, I am not quite sure. It was probably either Jay Richards or John West. It might have been a guy named Rob Crowther, who is their press person, but I am not sure at this point.
Q: At the time that this request was made, did you have an understanding about what the Discovery Institute's position was about the actions that the Dover School District was taking?
A: Well, we will start by saying I'm not entirely sure. I don't keep straight in my head the sequence of when various impressions were made. But it has been

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Discovery's position for a while I believe that once you emphasize teaching the difficulties and controversies with Darwinian Theory and not emphasizing or trying to teach Intelligent Design in the schools. So it was something like that.
Q: You have the understanding that that was their position when they made this request?
A: I believe I did, yes.
Q: Do you have an understanding of why that is Discovery Institute's position?
A: Well, I think I have read a few things. I am not sure I agree with it. But I believe somebody said somewhere once that they think Intelligent Design is not sufficiently far along enough to discuss in schools.
Q: And you disagree with that proposition?
A: Yeah. I do. I think an idea does not necessarily have to be very far along at all to discuss in a school.
Q: What is your understanding of what the Discovery Institute means by not very far along?
A: I'm not quite sure to tell you the truth.
Q: Do you understand it to be a statement about how far — how much it has been developed scientifically?
A: That may be it. It may be — there's a number of people who work at Discovery, and I am not quite sure anybody has ever sat down — and nobody has ever sat down with

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[1] me and told me what their reasoning was behind it. So I
[2] am not quite sure.
[3] It may be that somebody thinks is not well
[4] developed scientifically. It might be that they think
[5] it's a good scientific idea, but that it has not
[6] commanded enough support within official scientific
[7] circles or some other reason.
[8] Q: When you use the expression official scientific circles,
[9] what are you referring to?
[10] A: Mostly bodies which issue statements on things like
[11] this. The governing councils of the American
[12] Association for the Advancement of Science, the people
[13] who write official reports for the National Academy of
[14] Sciences and so on.
[15] Q: You used the word Darwinian Evolution. I think in one of
[16] your prior answers or maybe the Darwinian Theory. I
[17] just want to make sure that we have an understanding of
[18] what you mean by that.
[19] Can you explain what that term refers to?
[20] A: Darwinian Evolution?
[21] Q: Yes.
[22] A: All right. First, by Darwinian Evolution, I understand
[23] that not only did life develop by a process of descent
[24] with modification, not only are all creatures related
[25] through descents to ancestors in the past, but that that

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[1] process occurred by random changes, random mutations in
[2] the organisms followed predominantly by a process of
[3] natural selection.
[4] And the neo Darwinian Theory, which I kind of I
[5] often use both interchangeably, the neo Darwinian Theory
[6] includes a modern understanding of genetics in that mix
[7] and therefore designates the random changes as changes
[8] in the DNA structure of the organisms.
[9] There are various types of changes that can occur,
[10] but I think that is secondary. It is the process of
[11] natural selection, of working on the random variation
[12] that is the Darwinian idea.
[13] Q: When we are talking about the Darwinian idea, you are
[14] not talking about just what Darwin said frozen in time
[15] in the late 19th Century; you are talking about also
[16] what has been developed in science since that time?
[17] A: Well, I am not going to endorse everything for the past
[18] hundred years in a blanket fashion, but sure, I
[19] certainly include modern ideas on that as well.
[20] Q: I am not asking you to agree that everything is right,
[21] but just that when you use the term Darwin Evolution,
[22] you are not frozen in time in 1860?
[23] A: No. I include gene duplications and whole geno
[24] duplications and transposons and all sorts of things,
[25] things that Darwin knew nothing of.

[1] Q: What was the result of your — you did send a letter to
[2] Dr. Nilsen; correct?
[3] A: Yes, I did.
[4] Q: What happened after that?
[5] A: Nothing. I received no response at all. He never — I
[6] did meet him then subsequently two times, once at the
[7] Elizabethtown College forum where Victor Walczak from
[8] your side was there, too. And Richard Nilsen was there,
[9] and I said hi. And also at the seminar I gave at the
[10] Dover School District. I spoke with him. But at no
[11] point did he ever mention that letter.
[12] Q: Other than these sort of casual meetings, did you ever
[13] sort of interview or gather information from Dr. Nilsen?
[14] A: No.
[15] Q: And anybody else at Dover?
[16] A: No.
[17] Q: No members of the School Board?
[18] A: No.
[19] Q: Have you ever read any depositions that have been taken
[20] in this case?
[21] A: No.
[22] Q: Were you provided a copy of the Complaint that was filed
[23] in the case by plaintiffs?
[24] A: Yes.
[25] Q: Were you provided a copy of the Answer that was filed by

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[1] defendants?
[2] A: Yes.
[3] Q: Have you seen any documentation of the change to the
[4] biology curriculum in Dover that is the subject of this
[5] lawsuit?
[6] A: Yes, I saw the statement that they made and so on.
[7] Q: Let me just distinguish sort of between two slightly
[8] different items. One is the change to the curriculum
[9] that was the product of a resolution passed by the
[10] School Board.
[11] A: Yes.
[12] Q: And the second is the actual statement that has been
[13] read to students in the classroom. Distinguishing it
[14] that way, have you seen either or both?
[15] A: I have seen both of those, yes.
[16] Q: There was also a newsletter that was sent to members of
[17] the Dover community relating to this controversy. Have
[18] you seen that?
[19] A: No.
[20] Q: Am I correct that you made a presentation to the Dover
[21] community about the subject of Intelligent Design?
[22] A: Yes.
[23] Q: Who asked you to do that?
[24] A: Initially, it was Richard Thompson of the Thomas More
[25] Law Center. He set it up. And only late — within with

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1) a week or so before the presentation, was I contacted by
2) anybody at Dover, a secretary or somebody there, who
3) asked me what sort of audio visual equipment I would
4) need.
5) Q: And that is Power Point in your case, right?
6) A: Yes, indeed. Never go anywhere without Power Point.
7) Q: I'm just learning. What was your understanding of the
8) purpose in your making that presentation — of the
9) District's purpose? I'm sorry.
10) MR. WHITE: Objection. You set the question out,
11) and you changed it.
12) BY MR. ROTHSCHILD:
13) Q: I will reask it. What was your understanding of the
14) School District's purpose of having you come and make
15) this presentation?
16) A: I am not — at this point, I am not quite certain of
17) what I understood.
18) MR. WHITE: I object. This is calling him to
19) speculate.
20) MR. ROTHSCHILD: I am just asking for his
21) understanding.
22) BY MR. ROTHSCHILD:
23) Q: You can answer.
24) A: Okay. My thought — my own personal thought, although I
25) am not sure that anybody ever said this to me, was that

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1) I thought the District wanted to show people that
2) Intelligent Design was a reasonable idea. Maybe I am
3) flattering myself. That is what I thought.
4) Q: Anything else?
5) A: That's it.
6) MR. ROTHSCHILD: Can we mark this as Behe 2?
7) (Behe Exhibit 2 was marked.)
8) BY MR. ROTHSCHILD:
9) Q: The document I have just marked as Behe Exhibit 2 and
10) handed to you is what looks to be a Power Point
11) presentation entitled The Argument for Intelligent
12) Design in Biology with your name below it.
13) Do you recognize this as the slides from the Power
14) Point that you presented to the Dover community in April
15) of this year?
16) A: It seems to be, yes.
17) Q: Do you consider yourself an expert on any of the issues
18) that are in dispute in this case?
19) MR. WHITE: Objection. You can clarify which
20) issues you are talking about.
21) BY MR. ROTHSCHILD:
22) Q: Do you consider yourself an expert in anything that is
23) going on in this case, Professor Behe?
24) A: I am not quite sure exactly what the issues are, whether
25) it is a legal issue of what is to be taught, or the

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1) science involved or such things.
2) So yeah, I guess I would like — I am not quite
3) sure how to respond.
4) Q: What areas do you hold yourself out as an expert in that
5) you think are relevant to this case?
6) A: I wrote a book arguing for Intelligent Design and
7) explaining why I think Darwinian Evolution is an
8) inadequate explanation for what we found in biology. So
9) I have experience in thinking about questions like that.
10) Q: Do you hold yourself as an expert in the area of
11) biochemistry?
12) A: Yes.
13) Q: Does that expertise in biochemistry have any relevance
14) to the issue of Intelligent Design that is in dispute in
15) this litigation?
16) A: Yes.
17) Q: Do you hold yourself out as an expert in evolutionary
18) biology?
19) A: Evolutionary biology is a very, very large field. And
20) so I would say I am very well acquainted with such
21) issues as they impinge on biochemistry.
22) Q: So you consider yourself an expert in evolutionary
23) biology as it relates to biochemistry?
24) A: In aspects which relate to the question of whether the
25) Darwinian mechanism of random mutation and natural

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1) selection can build complex biochemical structures.
2) Q: Do you consider yourself an expert in evolutionary
3) biology in any other respect?
4) A: I consider myself quite knowledgeable about other
5) aspects of evolutionary biology, but I do not claim
6) expertise in the field.
7) Q: Fair enough. Are there any other areas of biology other
8) than what you have just described which you would hold
9) yourself out as an expert in?
10) A: Well, I'm knowledgeable about areas of nucleic acid
11) structure and function and protein structure and
12) function.
13) Q: Do you consider yourself an expert in those topics?
14) A: It depends upon what you mean by the word expert. I
15) have published in those areas, and I have a Ph.D. and
16) post doctoral experience in those areas.
17) If that's what you consider to be an expert, then
18) I am.
19) Q: You answered that you did consider yourself an expert in
20) the area of biochemistry?
21) A: Yes.
22) Q: Using that same standard that you set out for yourself,
23) do you also consider yourself an expert in the area you
24) just described?
25) A: Yes.

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(1) Q: Have you ever studied biology at the organism level
(2) after your undergraduate education?
(3) A: No.
(4) Q: Have you ever done any research in biology at the
(5) organism level?
(6) A: No.
(7) Q: Have you ever studied comparative biology or comparative
(8) anatomy?
(9) A: No.
(10) Q: Have you ever done any research in those areas?
(11) A: No.
(12) Q: Do you consider yourself an expert in paleontology?
(13) A: No.
(14) Q: Have you studied paleontology in any respect since your
(15) undergraduate education?
(16) A: No.
(17) Q: Do you consider yourself an expert in the area of gene
(18) sequence comparison?
(19) A: No.
(20) Q: Do you consider yourself an expert in the area of
(21) information theory?
(22) A: No.
(23) Q: Do you consider yourself an expert on the subject of the
(24) evolution of sexual reproduction?
(25) A: That's a difficult question to answer.

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(1) Q: These questions always are. I know you have a lot of
(2) children.
(3) A: I do okay there.
(4) Q: I meant in teaching them about it.
(5) A: Let me just say that because the origin of sexual
(6) reproduction is so little understood, it confuses me as
(7) to what an expert would in fact be. I have certainly
(8) read on the topic and discerned that people who think of
(9) these questions for a living continue to be confused and
(10) tentative in the area.
(11) But I do not do work on this area myself.
(12) Q: And don't hold yourself out as an expert in that field?
(13) A: No.
(14) Q: You have made the claim in your report that the Theory
(15) of Evolution has not explained the advantage of sex?
(16) A: That's correct.
(17) Q: Can you describe how Intelligent Design accounts for the
(18) origin of sexual reproduction in organisms?
(19) A: No.
(20) Q: Do you have an area of specialty within the field of
(21) biochemistry?
(22) A: Yes, I work or worked for a long time on nucleic acid
(23) structure.
(24) Q: And you amended your answer to say worked for a long
(25) time. Do I understand you to mean you don't work in

(1) that field anymore?
(2) A: Well, in the past eight years I have become very
(3) involved with the issues surrounding those I discussed
(4) in my book in 1996, Darwin's Black Box, on the ability
(5) of biochemical systems to develop by random mutation and
(6) natural selection. So I have not been involved as much
(7) with that field since, yes.
(8) Q: As much or not at all?
(9) A: Well, as much. I still keep tabs on it and read in it.
(10) I have not published in it for a while.
(11) Q: Not done research in that area for a while?
(12) A: That's correct.
(13) Q: But prior to the publication of Darwin's Black Box, you
(14) did do original research in the area of nucleic acid
(15) structure?
(16) A: Yes.
(17) Q: And you did publish in that area?
(18) A: Yes.
(19) Q: And when you published, did you publish in peer reviewed
(20) scientific journals?
(21) A: Yes.
(22) Q: And for how long a period of time were you doing
(23) research in this area?
(24) A: It was from about '82 to '97, '98.
(25) Q: And in that time period, how many articles would you

(1) estimate you published on the area of nucleic acid
(2) structure?
(3) A: I would have to count them up. Probably fifteen or so.
(4) Q: And when you wrote these articles you submitted them to
(5) peer reviewed journals, correct?
(6) A: Yes.
(7) Q: Why did you do that?
(8) A: Because I wanted them to be published in those journals
(9) because the people who were most interested in those
(10) topics were people who were reading those journals.
(11) Q: Can you give me examples of the journals that you
(12) submitted your papers to and that published them?
(13) A: There was "Nature, Proceedings of the National Academy
(14) of Sciences," "Journal of Molecular Biology," "Nucleic
(15) Acids Research." There may have been a few others.
(16) Q: Of those journals, were there any ones in particular
(17) that you were particularly pleased when they would
(18) publish your paper?
(19) A: Yeah. There are journals which are more difficult to
(20) get one's research published in. So one is always happy
(21) to get a paper in those.
(22) Q: "Nature?"
(23) A: "Nature, Proceedings of National Academy."
(24) Q: "Journal of Molecular Biology?"
(25) A: Yes, that's a good one, too.

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Q: Did you ever submit an article on the topic of nucleic acid structure that was not — that was ultimately rejected by a peer reviewed journal?

A: Ultimately rejected, yes.

Q: Did that happen often?

A: Not so often.

Q: Describe for me the process that you went through when you submitted an article to a journal and peer review took place. Describe what happened from the time you first submitted the article to its publication.

A: Well, one would put it in an envelope and mail it out, wait a while. Often times, you would get back within a week a notice from the journal that the paper had reached their office and that they would be sending it out to other people for their comments — other scientists for their comments and reviews.

After a month, two months, depending on how prompt the reviewers were, you would get a notice back from the journal which would contain their — usually contain their comments and a statement by the editor saying that either it was accepted, accepted but you needed to make revisions in the manuscript or conduct other experiments, or else that it was rejected.

Q: When you said it contained their comments, are you referring to the journal or the peer reviewers?

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A: I'm sorry?

Q: You made the statement you would get a notice back from the journal which would contain their comments.

A: It would contain both. It would contain often times copies of the statements made by the scientists reviewing the document, as well as the statements of the editor of the journal or associate editor.

Q: It was sometimes the case that the reviewers or the journal came to the conclusion that further experiments were needed?

A: Sometimes, yes.

Q: When that happened in your case, did you do further experiments?

A: Often times, I did. Sometimes I would send it to a different journal, and sometimes they would accept it as is.

Q: Would you know the identities of the peer reviewers that reviewed your article?

A: Usually not. They are generally done anonymously unless there's some special reason. On rare occasions, the reviewer would reveal himself to me because it might be somebody that I had known earlier, and they were interested in the topic, or some other reason.

Q: What was your understanding of the purpose of this process of having other scientists look at your

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experimental work before it could be published in the journal?

A: To make sure there weren't any gross conceptual or errors of — so that the experiment seemed to be well done, that there weren't any obvious areas within the immediate area that you were trying to investigate that could be explored which might upset your conclusions. And essentially to check for the reasonableness of the claims.

Q: Have you ever served as a reviewer for any peer review journals?

A: Yes, I have.

Q: And sort of during your academic career — let me ask you post 1996, did you continue to serve as a reviewer in journals relating to biochemistry?

A: Yes.

Q: You had been doing that for some time before?

A: Yes.

Q: Give me a sense how many articles would you review a year?

A: Maybe two or three.

Q: What did you understand your responsibility was when you were serving as a reviewer?

A: It was to look at the experiments, see if the experimental results — if the techniques and so on

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seemed to be well done, well chosen, that the conclusions were followed from the data, that there weren't any gaps or problems in the experiments left unexplored.

Q: In your capacity as a peer reviewer, were there ever occasions where you did find faults that you felt needed to be called to the attention of the author?

A: Yes.

Q: And you communicated those?

A: Sure.

Q: During your academic career when you were working in the area of nucleic acid structure, did you ever present papers at academic conferences?

A: Yes. I gave a couple of poster sessions and occasional talks.

Q: And what kind of bodies would you appear before when you were studying in the area of nucleic acid structure?

A: What would I appear before? Often times one would go to a large meeting, and they would have poster sessions. A poster session is where you make a large — get a piece of large poster board and tape or affix to it a description of your research that you want to communicate.

Generally, these are held in a rather large hall, and other people kind of walk by and sometimes just kind

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(1) of stare and read your poster on their own. Sometimes,
(2) they would stop and chat with you for a while. That is
(3) pretty much it.
(4) Q: Who were gatherings comprised of? It wasn't the
(5) Philadelphia Flower Show. It was a gathering of
(6) scientists?
(7) A: Sometimes it was, yes. It was meetings of scientists,
(8) the American Society for Biochemistry, Molecular
(9) Biology, Protein Society and so on.
(10) Q: What did you do that? Why did you make those
(11) presentations?
(12) A: Well, because I had results that I thought were
(13) important that I wanted to communicate. These people
(14) were the ones that I thought would be most interested in
(15) hearing of the results that I had.
(16) The results that I had I thought might help them
(17) in their own work to understand topics related to what I
(18) was discussing.
(19) Q: Would you also attend those conferences and walk around
(20) and ask people questions about their poster boards?
(21) A: I would, yes.
(22) Q: You understand that part of controversy in this
(23) litigation involves the textbook Of Pandas and People,
(24) the central question of biological origins?
(25) A: Yes.

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(1) Q: Did you have any involvement in the development of Of
(2) Pandas?
(3) A: For the second edition, I was asked to write a section
(4) on blood clotting, and I think that it is in that book
(5) there.
(6) Q: How were you retained to write that? I take it you did
(7) write that section?
(8) A: I did.
(9) Q: And who retained you to do that?
(10) A: A man named John Buell, who is the head of something
(11) called the Foundation for Thought and Ethics near
(12) Dallas, Texas.
(13) Q: What was the Foundation or Thought and Ethics'
(14) relationship to Pandas?
(15) A: I think they are the publishers. He retained people to
(16) write the book.
(17) Q: I have the textbook here. Unfortunately, I have only
(18) one copy so we will have to share. I notice that you
(19) are not listed as an author or an editor and
(20) contributor.
(21) Is that consistent with your memory?
(22) A: I don't remember how I was listed, if at all.
(23) MR. WHITE: Excuse me, Eric. Which edition?
(24) BY MR. ROTHSCHILD:
(25) Q: I have the 1993 edition. You are listed as a critical

(1) reviewer on the acknowledgements page. I am happy to
(2) show you what I am working from.
(3) A: I just want to check to see. Okay.
(4) Q: We will probably be passing this back and forth.
(5) MR. WHITE: Also for the record, that is the
(6) second edition?
(7) MR. ROTHSCHILD: Yes.
(8) BY MR. ROTHSCHILD:
(9) Q: Was the section on the blood clotting cascade the only
(10) section you wrote for this edition?
(11) A: I believe so, yes.
(12) Q: Just return to that again. If you could just tell me
(13) the chapter, or pages, if that is a better way to
(14) differentiate that include the section you wrote.
(15) A: Okay.
(16) Q: I think if you look around page 145, you are going to
(17) get in the ballpark.
(18) A: I think it begins on the middle of page 141 and goes to
(19) the middle of page 144, yes.
(20) Q: I directed you to page 145, and the reason I picked that
(21) page is there is continued text that reads creeping
(22) toward clotting.
(23) A: I see. Let me take that back again. Yeah. That's
(24) right. Okay. I didn't notice that. Okay. I likely
(25) wrote that as well.

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(1) Q: I am sorry to go through the process this way. Just to
(2) make sure the record is clear, you start at page 141.
(3) Is there a point that your section ends and that is
(4) inclusive of all of the pages in between? In other
(5) words, does it go to the end of the chapter 148? Can
(6) you just be a little more precise?
(7) A: Okay. I recognize some of my arguments on pages 146 and
(8) 147. I don't know about the conclusion here. I don't
(9) think I wrote the conclusion.
(10) I would say it likely starts from middle of page
(11) 141 to the middle of page 147.
(12) Q: All the way up to the conclusion?
(13) A: Yeah, but not including the conclusion.
(14) Q: Understood. You have employed the term irreducible
(15) complexity in your writings; correct?
(16) A: That's right.
(17) Q: Does the concept of irreducible complexity appear in Of
(18) Pandas?
(19) A: To tell you the truth, I don't remember.
(20) Q: And when I ask that question I believe I am correct in
(21) saying that the term does not appear?
(22) A: Okay.
(23) Q: But does the concept that you would talk about in
(24) Darwin's Black Box of irreducible complexity, was that
(25) employed in any way to write the section about the blood

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1 clotting cascade?

2 A: I don't think so. I don't mean to be picky, but these
3 concepts are often very complex. And the more one
4 thinks about them, the more one appreciates the need to
5 be as precise as possible.

6 So I am not quite sure that I would say that the
7 exact same concept that I later talked about of
8 irreducible complexity is what I was thinking about
9 here.

10 Q: In your discussion of the blood clotting — let me
11 strike that for a moment. Your discussion of the blood
12 clotting cascade in that section, is that the system of
13 any particular organism or set of organisms?

14 A: It is pretty common to most vertebrates.

15 Q: So when you are discussing the development of the blood
16 clotting cascade in this chapter, that is a discussion
17 of the blood clotting system found in vertebrates?

18 A: That's correct.

19 Q: On page 145 — and I will show it to you after I read
20 from the book — it is stated only when all the
21 components of the system are present and in good working
22 order does the system function properly. And I will
23 show you that in the text right there.

24 A: Okay.

25 Q: Is that a correct assertion of your position on the

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1 blood clotting system?

2 A: Well, that's correct for a blood clotting system. One
3 has to be very careful because there are differences in
4 clotting systems with different organisms. But for any
5 particular clotting system, that is correct.

6 Q: So, for example, the mammalian blood clotting system, it
7 would be your position that only when all of the
8 components of that system are present and in good
9 working order does the mammalian blood clotting system
10 function properly?

11 A: Well, you have to be careful about what you consider to
12 be a component of the system. Some components are
13 helpful, but not necessary. But some are necessary.

14 Q: So it would be an overstatement to say all the
15 components of the system must be present for the system
16 to function properly?

17 A: No. It depends on how you define the system. If you
18 define the system as the proteins which are needed for
19 the system to function, then it is pretty much by
20 definition saying that if one of the proteins is
21 missing, then the system won't function.

22 Q: That is almost tautological, isn't it; if everything
23 isn't there, everything isn't there?

24 A: In a sense it is, and in a sense it isn't. One can talk
25 about components which are required, but other

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1 components which can modify different activities of the
2 blood clotting system, but which when removed the system
3 will go faster or slower or some such thing. So one has
4 to be careful about exactly what activity, what function
5 you are trying to focus on.

6 Q: Is it fair to say that some vertebrates have blood
7 clotting systems that contain some, but not all of the
8 components that are found in the mammalian blood
9 clotting system?

10 A: I am sorry. Say that again.

11 Q: Is it fair to say that some vertebrates have some, but
12 not all of the components that are found in the
13 mammalian blood clotting system?

14 A: I would need to hear about what you are talking about.
15 It gets to be a bit difficult because some animals might
16 have clotting components which are not yet recognized to
17 be such. And the system which has been most thoroughly
18 studied is the human system followed by creatures more
19 or less closely related to us.

20 I know that fish have a number of components very
21 closely related to mammalian ones, but it is not certain
22 that ones that have not yet been discovered, whether
23 they are in fact there or not.

24 Q: From what we have discovered in fish clotting systems,
25 they don't contain all of the same components as the

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1 human system?

2 A: Well, unfortunately, you don't — it's not easy to say
3 because when one doesn't find a factor that you think
4 might be there, that is not necessarily a conclusive
5 evidence that it is not there. It might just have a
6 structure which is considerably different from a human
7 or a mammalian factor.

8 The other organism might use a different factor or
9 some such thing which plays a similar role and so on.

10 Q: You would agree that there are organisms that have blood
11 clotting systems that do not have all of the components
12 of all of the identical components of the human blood
13 clotting systems?

14 A: There are organisms that have blood clotting systems
15 that don't have any of the components that humans have,
16 but they work on different principles.

17 Q: So when you make the statement that all of the
18 components of the system are present and in good working
19 order, the system functions properly, you are really
20 referring to how it functions properly in humans;
21 correct?

22 A: Well, humans and organisms that have systems similar to
23 humans, yes.

24 Q: Then there are organisms that have systems different
25 than humans?

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1 A: That's correct.
2 Q: And they work too, right?
3 A: They work on different principles.
4 Q: But they work?
5 A: Yes.
6 Q: They clot blood?
7 A: That's correct. There are many ways to clot things.
8 Q: I noted before that you are identified as a critical
9 reviewer for this version of Of Pandas, this edition?
10 A: Okay. I don't remember that, but that's fine.
11 Q: Do you remember that you did review versions of Of
12 Pandas before it was published?
13 A: I did not. The only thing I reviewed was what I wrote.
14 I didn't have anything to do with the rest of the book.
15 Q: In your experience as a scientist, is it typical to be
16 described as a reviewer of your own work?
17 A: No.
18 Q: So using your own terminology describing you as a
19 critical reviewer of the textbook Of Pandas and People
20 isn't really an accurate representation; is it?
21 MR. WHITE: Eric, can you please show him the page
22 you are referring to?
23 BY MR. ROTHSCHILD:
24 Q: This is on the acknowledgment page, small roman numeral
25 three and you are in the first column because of your

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1 place in the alphabet I believe?
2 A: No, this is in order of importance I believe.
3 Q: Okay. So you were an important, critical reviewer?
4 A: I was the sixth most important.
5 MR. WHITE: Just for the record, he is joking.
6 A: Put a smiley face there. Yes, I see that. Okay. Well,
7 you know, I'm not quite sure how that is to be taken in
8 that context.
9 I guess during my contribution of my section, I
10 reviewed the science related to what I was writing
11 about. So perhaps the people publishing the book had
12 that in mind.
13 BY MR. ROTHSCHILD:
14 Q: Did you have any critical reviewers of your book
15 Darwin's Black Box?
16 A: Yes.
17 Q: Can you give me an example of a couple of people?
18 A: They were anonymous. The publisher of Free Press sent
19 out the manuscripts to a number of people before it was
20 accepted. I don't know who they are.
21 But yeah, I don't know who they are. Actually, I
22 do know one. It comes to mind because he told me about
23 it later. It's a guy named Robert Shapiro at NYU who is
24 a Professor of Chemistry there and worked on the origin
25 of life. He has a blurb on the back of the book you

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1 might notice.
2 Q: I see. Have you subsequently read the second edition Of
3 Pandas and People in its entirety?
4 A: No.
5 Q: Have you read any of it?
6 A: Not in a long time.
7 Q: When did you read it?
8 A: I probably read it in the early 90's, early to mid 90's.
9 Q: Do you have any recollection of its contents?
10 A: A couple of things, yes. Yes, I do have a couple of
11 things.
12 Q: Based on your recollection, do you believe it is a valid
13 presentation of the concept of Intelligent Design?
14 A: There are things I agree with and things I disagree
15 with. I think it is a provocative and interesting book.
16 Q: Stipulated.
17 A: It provokes a lot of people.
18 Q: What aspects of the book do you disagree with?
19 A: Well, I would have to read it a little. I don't want to
20 say offhandedly after not having read it for 15 years or
21 maybe 12 years or so. But I think they make some
22 conclusions I would not make, that they jump over
23 distinctions that I wouldn't in fact make.
24 So I am afraid — without reading it through
25 again, I am afraid I wouldn't be able to give anything

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1 specific.
2 Q: Are there any assertions that you recall — and I
3 appreciate the passage of time. Are there any
4 assertions you recall that you think are inconsistent
5 with what you understand Intelligent Design to mean?
6 A: Inconsistent? Well, again, I do not have anything
7 readily coming to mind. They talk about the fossil
8 record quite a bit, and it is my contention that that is
9 not a good place to look. It is not the best place
10 perhaps to look for the effects of Intelligent Design.
11 I am known for arguing that the best place is to
12 look at the molecular level. I am a biochemist after
13 all.
14 Again, I don't want to say more than that without
15 having to look at it again.
16 Q: Have you reviewed the section you wrote in the last ten
17 years?
18 A: I am afraid I haven't even done that, no. I have had
19 other things to worry about.
20 Q: You couldn't say right now one way or the other whether
21 that is a valid description of the blood clotting
22 cascade and how it might have been developed?
23 A: Well, it is my recollection that the clotting cascade
24 has not, you know, changed in 15 years. So I assume if
25 it is the same one I talked about in Darwin's Black Box,

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11 then it is likely to be correct.
12 Q: Maybe a better way to phrase that is you can't say right
13 now whether your analysis of the blood clotting cascade
14 and how it was developed is a valid analysis?
15 A: In the book Of Pandas and People?
16 Q: Right.
17 A: Not without reading it again.
18 Q: Do you expect to testify in support of the District's
19 use of Of Pandas as a reference textbook?
20 A: Clarify for me, if you would, what do you mean by
21 reference textbook?
22 Q: Do you understand how the book Pandas is being used in
23 the Dover School District?
24 A: It is my understanding that an announcement is simply
25 being made that it is available in the library.
26 Q: Using that understanding of how it is going to be
27 employed, do you expect to testify in support of how the
28 District is using Pandas?
29 A: I would be happy to testify that I think it would be a
30 great book to have in the library, yes.
31 Q: Would you be happy to testify that it is a great book
32 for students to be directed to if they want to
33 understand more about Intelligent Design?
34 A: Yes.
35 Q: You can say that even though you have not read it in the

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36 last 12 years?
37 A: I can say that because I know it broaches the topic of
38 Intelligent Design. I know it discusses how we can come
39 to conclusions of Intelligent Design. It talks about
40 concepts that do not occur in normal biology textbooks
41 which I think are important and which I think would
42 broaden a student's view of what sorts of ideas can be
43 brought to bear on these topics.
44 Q: Are you aware of a new textbook under development called
45 Design of Life?
46 A: Vaguely, I'm afraid. I have heard — I have heard talk
47 of it in the past just month or so I think. And I think
48 — well, I think it is under development by Foundation
49 of Thought and Ethics. I think Bill Dembski is supposed
50 to be putting it together. More than that, I really
51 don't know.
52 Q: Has the Foundation of Thought and Ethics asked you to
53 participate in the development of that book in any way?
54 A: I think a year or two ago, Bill Dembski himself asked if
55 I would be a coauthor of the book. After hemming and
56 hawing, I said I don't really have time. And so that's
57 pretty much it.
58 Q: Other than that conversation with Mr. Dembski, have you
59 been involved in any way with the development of Design
60 of Life?

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61 A: No.
62 Q: Have you had any interaction with Mr. Dembski about the
63 contents that would appear in Design of Life?
64 A: No.
65 Q: Other than what you described, do you know anything else
66 about the Design of Life?
67 A: The book, no.
68 MR. ROTHSCHILD: I think this would be a good time
69 to take a break.

AFTER RECESS

BY MR. ROTHSCHILD:

70 Q: Mike, as we have talked about already today, you wrote a
71 book in 1996 called Darwin's Black Box?
72 A: That's correct.
73 Q: Royalties on that are pretty good I bet?
74 A: I do okay.
75 Q: That book makes a case for Intelligent Design; correct?
76 A: That's correct.
77 Q: Is it fair to say this the publication where you unfurled
78 the concept of irreducible complexity?
79 A: Yes.
80 Q: Prior to the publication of Darwin's Black Box, had that
81 concept ever been described in point by you in anything
82 published?
83 A: I don't think so. I don't think so. Certainly nothing

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84 that has attracted as much notice.
85 Q: I am going to spend some time later on what exactly
86 irreducible complexity means. But first, I want to ask
87 you some other questions about the book.
88 I think you alluded a few questions ago that
89 Darwin's Black Box did go through some kind of review
90 process?
91 A: Yes.
92 Q: Can you describe that review process?
93 A: I really don't know much about it. My editor at the
94 Free Press said that he was going to send out the
95 manuscript to scientists for their comments. And I know
96 that one was, as I said, Robert Shapiro at NYU. And
97 there were four others. I know another fellow I met him
98 later on. And there were three others.
99 Q: Do you know who that other fellow was?
100 A: Yes.
101 Q: Who was that?
102 A: I believe his name is Mike Atchison who is a Professor
103 at the University of Pennsylvania I think in either the
104 dental school or the vet school.
105 Q: Do you know how the reviewers were selected by the Free
106 Press?
107 A: Let's see. I think I suggested some names. I think I
108 suggested some names. And the editor got in touch with

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(1) those folks.

(2) To tell you the truth, at this point I am not
(3) quite sure whether there were people — I think there
(4) were people who he got in touch with and couldn't do it.
(5) Some that could. Some that did.

(6) Q: Who were the people that you selected — suggested? I
(7) am sorry.

(8) A: Suggested. Let's see. I guess — I am not sure. I may
(9) have suggested Shapiro. I did not suggest Michael
(10) Atchison. I suggested the fellow at Texas Tech whose
(11) name escapes me now who I had met earlier at a public
(12) conference debate on Intelligent Design and Darwinian
(13) Evolution held at Texas A&M in the early 1990's who was
(14) an opponent of Intelligent Design.

(15) There was some other fellow. I think he is at
(16) Washington University — or at least was. I have
(17) forgotten his name. It's Sean something or other. I
(18) think it was Sean something or other. He is a DNA
(19) sequence analyst. I forget.

(20) I think I suggested a man named Neville
(21) Kallenbach. He is also at NYU. He was the Chair of the
(22) Chemistry Department there, but he said he couldn't do
(23) it.

(24) Q: The fellow at Texas Tech, you said he was an opponent of
(25) Intelligent Design. Do you know what his position was

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(1) on the history of life type issues?

(2) A: Well, from what I remember, it was pretty standard
(3) Darwinian Evolution.

(4) Q: And the other people you identified, did you know what
(5) their positions were on those issues?

(6) A: Most of them I thought were pretty much standard
(7) Darwinian positions, but who seemed to be at least
(8) recognized that there might be problems with the current
(9) ideas, who seemed like they might be used to thinking
(10) about whether or not big issues were correct or not.

(11) Q: And other than selections based on your recommendations,
(12) do you know how the editor selected other people to
(13) review your book?

(14) A: Michael Atchison — if I am remembering his name
(15) correctly — I believe was an instructor of my editor's
(16) wife who was attending Vet School at the University of
(17) Pennsylvania. And so he asked. I think that is the
(18) connection why he asked him.

(19) Q: Do you have any understanding of what kind of expertise
(20) he brought to bear on the issues discussed in your book?

(21) A: The issues discussed in my book are general biochemical
(22) ones. The systems I talk about in my book are ones that
(23) are discussed in very many biochemistry textbooks.

(24) Most biochemists will have familiarity with these
(25) systems. And so most people will be — most biochemists

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(1) will be able to comment on them at the level I discussed
(2) them.

(3) Q: Is it your understanding that this Dr. Atchison had that
(4) kind of expertise?

(5) A: I did not know who — I did not find out his name until
(6) later.

(7) Q: Do you know now whether he had any familiarity with
(8) biochemistry?

(9) A: Yes, he's a Professor of biochemistry.

(10) Q: Fair enough. What was the result of this review
(11) process; did you get comments?

(12) A: I was sent a couple of comments. A number of comments.

(13) One of the comments that was sent is on the cover of the
(14) hardcover edition. Robert Shapiro at NYU — no, I'm

(15) sorry — James Shapiro — on the hard cover, James

(16) Shapiro — no, Robert Shapiro. I am sorry, Robert

(17) Shapiro is on the hardcover. He supplied a paragraph

(18) length comment and also some other comments, too.

(19) James Shapiro provided — reviewed the book for a
(20) national review soon after it was published, but he
(21) wasn't actually a reviewer of the book ahead of time.

(22) I saw some of the comments from other people, but

(23) right now it escapes me exactly what they were. I do

(24) remember that most of them said that yes, there are

(25) problems in biochemistry but were reluctant or disagreed

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(1) with the conclusion of Intelligent Design. But

(2) nonetheless, they told the editor that there weren't any

(3) errors of biochemistry that they detected in the books.

(4) Q: In Darwin's Black Box, you weren't publishing any
(5) results of your own original research; is that fair?

(6) A: That's correct.

(7) Q: Do you consider the kind of review that you just
(8) described to me to be the same as what we call peer

(9) review in the context of, for example, your publications

(10) on nucleic acid sequence in "Nature" or "The Journal of
(11) Molecular Evolution"?

(12) A: What do you mean by the same? I'm not sure.

(13) Q: Do you consider the review you just described to be peer

(14) review in the same way that you would describe the
(15) process that your research experienced for publication

(16) in "Nature"?

(17) A: Well, the book that I published is a very different sort
(18) of book than the technical papers I was publishing. And

(19) so I think that for the book that I published, this was

(20) yes, a thorough peer review.

(21) Q: In your experience as a scientist, is it common to have

(22) the opportunity to select the reviewers of the technical

(23) papers you submit to scientific journals?

(24) A: You are often requested to submit names of reviewers

(25) because the editors often times aren't sure who is the

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best people to look to in the field. You submitted names, and the editor selects among them.

Q: You said this was a very different type of publication. What did you mean by that?

A: Well, it is a book. It is a book length publication. My other publications were relatively short papers. It deals with a more fundamental issue of science than the ones that my papers deal with.

And it makes -- and it deals with subjects that are controversial, which seem to have implications beyond science and so on. That's what I meant.

Q: And it is also distinguished from your technical papers in that it does not report original research?

A: That's correct. I am sorry. Maybe I should say that in the past, I have published reviews of other people's papers, too. So that does get into the literature, too.

Q: But Darwin's Black Box does not report original research?

A: That's correct.

Q: I am going to hand you a copy of the paperback version of the book. I would like you to turn to page 232.

A: (Witness complies.)

MR. WHITE: Are you going to mark this as an exhibit?

MR. ROTHSCHILD: Do you have any objection to

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(1) the work of hundreds or thousands of scientists; is that (2) fair?

(3) A: Yes.

(4) Q: Other individuals that you would sort of consider the (5) giants in this field?

(6) A: Of biochemistry in general?

(7) Q: Yes. You are describing the giants in the area that you (8) are describing in this paragraph?

(9) A: No. There's nobody in particular. There are people who (10) spend the better part of their life investigating one of

(11) the systems that I talked about, and others which

(12) investigate others and so on. So there's a large number

(13) of giants and a smaller -- and an even larger number of

(14) professionals who did all this work.

(15) Q: You would fit among that group, right?

(16) A: What do you mean?

(17) Q: You would be among the larger number of individuals?

(18) You would call yourself a giant?

(19) A: I am a working scientist.

(20) Q: In this area?

(21) A: In biochemistry, yes.

(22) Q: Does the work of James Watson and Francis Crick fall (23) under this description?

(24) A: Sure.

(25) Q: Would you agree that they are giants in the field?

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(1) that?

(2) MR. MATZKE: No objection.

(3) MR. ROTHSCHILD: Hearing no objection from the (4) owner of the book, we will mark it as Behe 3, but I am (5) not going to have it circulated.

(6) (Behe Exhibit 3 was marked.)

(7) BY MR. ROTHSCHILD:

(8) Q: Could you turn to page 232 which is the chapter entitled (9) Science, Philosophy and Religion?

(10) A: Yes.

(11) Q: The first paragraph of that section under the subheading (12) The Dilemma is what I would call an acknowledgment to (13) the hard work that has been done in biochemistry in the (14) last approximately 40 years.

(15) Is that a fair characterization?

(16) A: Yes.

(17) Q: And you say in there the knowledge we now have of life (18) at the molecular level has been stitched together from (19) innumerable experiments in which proteins were purified, (20) genes cloned, electron micrographs taken, cells (21) cultured, structures determined, sequences compared, (22) parameters varied and controls done; a lot of (23) experiments?

(24) A: Yes.

(25) Q: And I realize in this paragraph you are really crediting

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(1) A: Yes.

(2) Q: What about Jacob Monod, M-e-n-o-d?

(3) A: M-o-n-o-d?

(4) Q: M-e-n-o-d?

(5) MR. MATZKE: I think it is M-o-n-o-d.

(6) A: I guess he is not that big of a giant then if you don't (7) know how to spell his name.

(8) BY MR. ROTHSCHILD:

(9) Q: Are you familiar with that name?

(10) A: Yes.

(11) Q: Would you consider him a giant in the field of (12) biochemistry?

(13) MR. WHITE: Just for an objection. Exactly what (14) do you mean by giant? Are you talking about leading (15) people?

(16) BY MR. ROTHSCHILD:

(17) Q: Is that your understanding, Mike?

(18) A: I guess by the word giant, you mean renowned (19) biochemists, renowned scientists.

(20) Q: Fair enough. And Leslie Orgel, are you familiar with (21) her?

(22) A: It is a him.

(23) Q: I am sorry.

(24) A: Yes, I have read his work.

(25) Q: And he is a big figure in this field?

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[1] A: Certainly not as big as Watson and Crick. It is hard to
[2] rank them, but he is a prominent scientist.
[3] Q: In the first sentence of the next paragraph, you say the
[4] results of these cumulative efforts to investigate the
[5] cell, to investigate life at the molecular level is a
[6] loud, clear piercing cry of design in quotes, italicized
[7] and exclamation mark; is that correct?
[8] A: Yes.
[9] Q: When you make that statement, are you suggesting that
[10] this is the result concluded by all of the scientists
[11] that are described in the preceding paragraph?
[12] A: No. I am concluding that this is the result of their
[13] work. I am not saying that they have said so.
[14] Q: It is not something that James Watson has said?
[15] A: That's correct.
[16] Q: Francis Crick?
[17] A: That is correct. I am sorry. Let me amend that.
[18] Francis Crick actually has said that. He said that in a
[19] book of his published in the late 1980's that scientists
[20] have to constantly remind themselves that what they see
[21] in biology — and I might be paraphrasing. What they
[22] see in biology was not designed, but rather evolved.
[23] So from that statement and similar other ones, I
[24] conclude that what he sees looks to him like it was
[25] indeed designed. If you want to be literary, that it

[1] at that and said you know, look at that design, and the
[2] person to your left says oh, never mind. We have a
[3] theory about how that came about. Sure, it looks
[4] designed.
[5] My sentence here means that when a person looks at
[6] that who has not been defeated or utterly — whose ideas
[7] have not already been diverted by another argument will
[8] recognize the object to be designed.
[9] Q: So is it then a fair characterization of this sentence
[10] to say the results of these investigations of the cell
[11] cry out to everybody this was intelligently designed;
[12] just not all of us recognize it?
[13] A: It says that people who look at this, recognize the
[14] design. Everybody who looks at it — or who is
[15] knowledgeable enough to understand how these things
[16] work, looks at it and can see that it appears to be
[17] designed even though some people think that some other
[18] explanation could potentially account for it.
[19] Q: Again, I just want to be clear on terminology. You said
[20] appears to be designed, but you mean appears to be
[21] intelligently designed?
[22] A: Yes.
[23] Q: Then you go on in this paragraph to say the result is so
[24] unambiguous and so significant that it must be ranked as
[25] one of the greatest achievements in the history of

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[1] cries out design. But he does not — he resists the
[2] conclusion.
[3] Q: Okay. And when you write here that the result is a loud
[4] clear, piercing cry of design, what you mean by that is
[5] Intelligent Design; correct?
[6] A: Yes.
[7] Q: Not just the appearance of design?
[8] A: That's correct.
[9] Q: So this conclusion that is the result of these
[10] cumulative efforts, this is your conclusion; correct?
[11] A: No, this is the conclusion based on the work of what
[12] science has discovered. So the structure of the systems
[13] that we have discovered, I say shows workers in the
[14] field or appears to workers in the field as if they were
[15] indeed intelligently designed.
[16] Q: Even though most of them don't conclude that?
[17] A: That's right.
[18] Q: So let's be clear here. This loud, clear piercing cry
[19] of Intelligent Design, you are saying that is something
[20] that is a cry being experienced by this large group of
[21] professional researchers, or is it a cry that you are
[22] announcing?
[23] A: No. I think if I — let me try to be clear. I think it
[24] is a cry which comes out of the work itself. Just as if
[25] you passed by something like say Mt. Rushmore and looked

[1] science.
[2] What is the achievements we are referring to here?
[3] A: The discovery that life is purposely designed — or at
[4] least, segments of life are purposely designed.
[5] Q: Whose discovery is that?
[6] A: The scientific community at large.
[7] Q: So the scientific community at large has made the
[8] discovery that life is purposely designed?
[9] A: Right. That is the implications of their work.
[10] Q: Let's be clear here. That is your interpretation of the
[11] implications of their work. We are now talking about a
[12] discovery.
[13] James Watson didn't discover that life was
[14] purposely designed; did he?
[15] A: Not alone. That's correct.
[16] Q: You think he is one of a collective group of scientists
[17] that made that discovery?
[18] A: My argument is that the general work of thousands of
[19] scientists cumulatively showing the intricacy and
[20] elegance in molecular machinery of life, especially at
[21] the cellular level, molecular level shows the Design of
[22] Life, yes.
[23] Q: And the discovery of that circumstance is one of the
[24] great achievements in the history of science?
[25] A: Yes.

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Q: And all of these scientists are talking about participated in that discovery?

A: Well, yes, piecemeal, yes. I can give you an analogy maybe. Suppose you were on an archeological dig, and there were 10,000 people scraping away little bits of dirt, and eventually they uncovered some structure, say a Sphinx or some such thing. It would be my argument that it was their work that discovered this intelligent designed Sphinx.

Q: But in the case of the Intelligent Design you are referring to, this discovery all these scientists allegedly participated in, they don't actually agree with, most of them?

A: Well, I don't know about that. I know some don't. If we are talking about tens of thousands or hundreds of thousands of scientists, I think some of them do. I think one would have to survey everybody in a carefully worded manner to find out what everybody thinks of it.

Q: Then you say the discovery rivals those of Newton and Einstein, Lavoisier and Schroedinger, Pasteur and Darwin. Again, you are just speaking about the same discovery that was the work of — that was made by all these scientists?

A: That's correct.

Q: And then you go on to say the observation of the

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intelligent design of life is as momentous as the observation that the earth goes around the sun or that disease is caused by bacteria or that radiation is emitted in quanta?

A: That's correct.

Q: And whose observation are we talking about now?

A: Who observed that disease is caused by bacteria?

Q: No. Who made this observation of the intelligent design of life?

A: It is the work of the scientific community that did it.

Q: Again, it is these tens of thousands of scientists?

A: That's correct.

Q: You are not just referring to yourself?

A: Sure.

Q: Again, this is an observation of the intelligent design of life that you are attributing to all these scientists

even though many of them actively disagree with you, and many of them, you have no idea of their position?

A: That is correct. My writing in this paragraph is meant to convey that their work makes manifest the intelligent design of life; although some think that other explanations may account for it.

Q: Is this book Darwin's Black Box what you would consider your major contribution to the concept of Intelligent Design?

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A: Yes.

Q: And am I correct that the signature concept introduced here is irreducible complexity?

A: Yes.

Q: Is it fair to say without the concept of irreducible complexity, there really isn't any scientific content to Intelligent Design?

A: No. I don't think that's fair.

Q: Would you agree that it is one of the primary arguments in support of Intelligent Design?

A: It's one of the primary arguments to show the unreasonableness of the alternative explanation to what most people would recognize as design. That is to Darwinian processes.

Q: So it is an argument against the argument for natural selection?

A: Yes.

Q: I want to be clear here. Is it also an argument for Intelligent Design?

A: Yes.

Q: Is it a central concept to the argument for Intelligent Design?

A: It is an important concept. I wouldn't call it central.

Q: What are the other important concepts in support of the proposition of Intelligent Design?

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A: Another concept is that when we see a system which is complex and functional, then we have in our experience always found that such a thing was designed.

So another important concept is an inductive argument that such systems bespeak design. And that in our experience, we do not have any non design arguments for them.

Q: We will get back to that. I will get back to that in detail later. But is it fair to say that the concept of irreducible complexity, along with the inductive reasoning you just described, the sort of two complementary pieces in your argument for Intelligent Design?

A: Would you say that again?

Q: Is the concept of irreducible complexity and the form of inductive reasoning you just described, the two complementary pieces to your argument for Intelligent Design?

A: Yes.

Q: Are there any other scientific concepts that are important to the proposition of Intelligent Design?

A: There are a number of — it depends on how you define Intelligent Design. There are arguments for Intelligent Design from biology and biochemistry. There are arguments for Intelligent Design from the laws of

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11 physics, from the laws of chemistry and the origins of
12 life, from astronomy based on the position of earth in
13 the universe and many others.

14 So the arguments I make are not exhaustive of
15 arguments for Intelligent Design, but they are
16 particularly important in arguments for Intelligent
17 Design in biochemistry.

18 Q: And what about in biology?

19 A: In biology, they are not — I emphasize in the book that
20 these arguments are limited. I limit them to molecular
21 systems.

22 Q: And that is the purview of biochemistry?

23 A: That's correct.

24 Q: You are not making an argument one way or the other as
25 to whether these principles extend on to biological —

26 A: To higher levels of biology, that's correct.

27 Q: Are there any scientific concepts that you are aware of
28 or scientific work that addresses the question at the
29 biological level for Intelligent Design?

30 A: Well, I have certainly read arguments that features at
31 higher levels of biology are beyond non design
32 explanations. And those arguments tend to be the
33 inductive ones that I listed for biochemistry.

34 That is when we see functioning systems, complex
35 functioning systems, in our experience, they bespeak

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11 design. Coupled to the fact that rigorous, detailed
12 explanations of how such systems could have appeared by
13 unintelligent mechanisms are currently lacking.

14 So I have certainly heard of such arguments. But
15 as a biochemist, I limit my own arguments to molecular
16 systems.

17 Q: Who are the sponsors of those arguments at a biological
18 level?

19 A: I would have to look them up. I can't think off the top
20 of my head.

21 Q: Are these people who are identified with the Intelligent
22 Design movement?

23 A: Yes. They are certainly people in the Intelligent
24 Design movement who make such arguments.

25 Q: Do you know whether any of those individuals are
26 biologists?

27 A: I would have to think about it for a while.

28 Q: Sitting here today, you can't think of any?

29 A: Not off the top of my head.

30 Q: In William Dembski's rebuttal report, the rebuttal to
31 the various plaintiff's experts which I appreciate you
32 have not read yet, but he says two seminal books that
33 have defined the ID movement are Darwin's Black Box and
34 Dembski, his own design inference.

35 Do you agree with that characterization?

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11 A: Yes.

12 Q: And Dembski is not a biologist?

13 A: That's correct.

14 Q: Or a biochemist?

15 A: That's correct.

16 Q: He is not a scientist at all?

17 A: It depends on how you count mathematics and statistics.

18 He has a Ph.D. in mathematics and so on. Mathematics is
19 the basis of much of science.

20 Q: Do you consider mathematics, a mathematician, a
21 scientist?

22 A: Some I do, yes. There are such things as experimental
23 mathematics, statistics. It depends on your definition.

24 I would happily think of such people as scientists.

25 Q: Would you happily think of Mr. Dembski as a scientist?

26 A: I think of him more of a mathematician and philosopher.

27 Q: Not a scientist?

28 A: Yes, that's correct.

29 Q: I, as you might imagine, read your report very
30 carefully, and the phrase irreducible complexity does
31 not so far as I can tell appear anywhere in the report
32 except for if you're quoting someone who was critiquing
33 your work?

34 A: Okay.

35 Q: Does that sound correct to you?

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11 A: Yes.

12 Q: And this is your big contribution. Why didn't you write
13 about it in the report?

14 A: I was not asked to address the argument for irreducible
15 complexity, or indeed to make an argument for
16 Intelligent Design. Well, I was not asked to address
17 irreducible complexity.

18 I was asked to address a set of specific topics
19 that Mr. Thompson gave to me. In doing so, I wrote the
20 report that you have.

21 Q: And just going back to something you said earlier. You
22 said irreducible complexity is an argument against the
23 unreasonableness of the alternative of Darwinism; is
24 that correct?

25 A: Right.

26 Q: Am I understanding you correctly that by itself,
27 irreducible complexity does not demonstrate design; it
28 merely demonstrates the flaw in the alternative?

29 A: No. I think it does both. In nonbiological
30 circumstances when we see a complex object that has a
31 function such as say the faces on Mt. Rushmore, we
32 recognize them to be designed.

33 And in other circumstances when we come across a
34 mousetrap or so, we recognize those to be designed. The
35 mousetrap we specifically recognize to be designed,

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1) well, a big contributing factor is that it is
2) irreducibly complex. It needs a number of different
3) parts to function.
4) Nonetheless, in biology, the current paradigm for
5) how much complexity would arise is Darwin's paradigm for
6) how life arises is Darwin's Theory of Evolution by
7) random mutation and natural selection.
8) And the concept of irreducible complexity is
9) intended to argue that there are some systems that
10) resist such explanation in terms of small changes and
11) natural selection.
12) But at the same time, when we see such systems, we
13) recognize them to bespeak design, point to design.
14) I was wondering I hate to ask, but I have a full
15) glass of water here. I would like to make a little
16) break whenever it is convenient.
17) Q: You are always entitled to take one. Let's do it.
18) A: Thank you.
19) (A recess was taken.)
20) BY MFL ROTHSCHILD:
21) Q: Mike, I want to go back to something you said a few
22) minutes ago which is just to confirm you were not asked
23) to describe irreducible complexity in your report?
24) A: That's correct.
25) Q: And you also said, but you may have qualified it, so I

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1) while back again — that I didn't have time to do so.
2) Q: Just to be clear, a statement that you are coauthor of
3) the book would be false?
4) A: I will not have written anything. I might be — he
5) might in the future be able to persuade me to revise
6) some of the text or go over it to make sure that I think
7) that it correctly describes Intelligent Design and so
8) on.
9) So if one wishes to call such a contribution
10) authorship, in the future then I would be possibly an
11) author.
12) Q: If one were to say that now you were a coauthor of the
13) book, that would be false?
14) A: Well, it depends on if one had in mind this future
15) activity and anticipated I was going to be involved in
16) it.
17) Q: Would you characterize yourself right now, Mike, right
18) now a coauthor of the book?
19) A: I would not characterize myself that way.
20) Q: In Darwin's Black Box at page 39 — let me rephrase
21) that. Could you turn to page 39?
22) A: Yes.
23) Q: Tell me if your definition of irreducible complexity is
24) found on that page.
25) A: That is the definition I gave in the book, yes. I have

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1) want to make sure the record is clear. You weren't
2) asked to make the case for Intelligent Design in your
3) report?
4) A: That's correct.
5) Q: So you didn't?
6) A: I did not.
7) Q: Going back to the book Design of Life, the forthcoming
8) book Design of Life, if you were described as an author
9) of that book, as one of the authors, would you agree
10) that that is a false statement?
11) A: That's correct.
12) Q: And if Mr. Dembski had represented that he had reached
13) out and secured your support and work on the book, that
14) would be false?
15) A: I think he did ask me if I would be a part of the team
16) writing it, and I said I didn't have time. So he
17) reached out. And he may have said something like well,
18) when it is done, maybe we can list you as an author.
19) Q: If he represented that he had solicited new material
20) from you for the book, would that be a false statement?
21) A: New material?
22) Q: New text to be part of the book.
23) A: For me to write material for the book?
24) Q: Right.
25) A: He solicited it. I believe I told him — and this was a

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1) since tweaked the definition a little bit.
2) Q: We will get to that. And is the definition on page 39
3) is that the text in the bottom paragraph that begins by
4) irreducibly complex I mean a single system?
5) A: That's correct.
6) Q: And just in terms of the definition of irreducibly
7) complex in this book, can you tell me where it ends in
8) this paragraph?
9) A: It continues just for that sentence by irreducibly
10) complex, I mean a single system composed of several well
11) matched, interacting parts that contribute to the basic
12) function wherein the removal of any one of the parts
13) causes the system to effectively cease functioning.
14) Q: Explain to me how that definition has been tweaked.
15) A: In response to — some critics of my position have
16) argued that if one starts with a system which already
17) performs some function, one could potentially add a new
18) component which would assist the preexisting system to
19) function. And that in theory, one could eventually get
20) to a point where the extra component is required for
21) function.
22) And so in order to try to head off some
23) theoretical difficulties, I changed the definition in my
24) paper in Biology and Philosophy to add a phrase that by
25) necessity, the system has to have these parts.

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(1) I should add that the critics who brought up these
(2) suggested difficulties did not give what I thought were
(3) real examples of the phenomenon that they had in mind.
(4) But it was a theoretical difficulty that I sought to
(5) address.

(6) Q: Okay. Is the paper you are referring to where the
(7) definition was tweaked The Biology and Philosophy
(8) Journal article that was attached as Exhibit 8 to your
(9) report that you should have?

(10) A: Yes.

(11) Q: You can open up that notebook, and you will find that
(12) Exhibit 8. Is that the right article?

(13) A: Yes, it is.

(14) Q: And the article is entitled A Reply to My Critics;
(15) correct?

(16) A: Yes.

(17) Q: Can you show me where in this article you tweak the
(18) definition? I think the bottom of page 694 is correct,
(19) but don't take my word for it.

(20) A: I think it is at the bottom of page 694.

(21) Q: You said the defect can be repaired easily enough by
(22) inserting a word to define irreducible complexity as a
(23) single system which is necessarily composed, and you go
(24) on from there?

(25) A: Yes.

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(1) Q: If we turn to page 695, on the top half of the page you
(2) say however commentary by Robert Pennock and others has
(3) made me realize that there is a weakness in that view of
(4) irreducible complexity.

(5) You go on at the bottom of the page to say there
(6) is an asymmetry between my current definition of
(7) irreducible complexity and the task facing natural
(8) selection.

(9) And just sort of in lay terms, my understanding of
(10) what you are describing here is you shouldn't work
(11) backwards —

(12) A: Yes.

(13) Q: — from the full system. That is not what natural
(14) selection does. You have got to work bottom up?

(15) A: That's correct.

(16) Q: And you say in this article I hope to repair this defect
(17) in future work; is that correct?

(18) A: Yes.

(19) Q: Has that defect been repaired?

(20) A: I have not done that yet.

(21) Q: So you recognize in that paper written in 2001 that
(22) there is a defect in your current definition of
(23) irreducible complexity, but now in 2005 you have not
(24) repaired that?

(25) A: I did not view it as important.

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(1) Q: Explain what the consequence of this defect is to your
(2) proposition of irreducible complexity.

(3) A: Virtually nothing. Pennock's argument was that if one
(4) started out with a system that was more complex than the
(5) system that he had in mind to produce, then you could
(6) take away parts from a preexisting more complex system
(7) to produce the irreducibly complex less complex system.

(8) His example was a chronometer which sailors can
(9) use to determine their position at sea by keeping time
(10) very accurately. His argument — although he did not
(11) give details — was that perhaps if some part of the
(12) chronometer was broken, then it might not necessarily
(13) keep time accurately enough to be used to determine
(14) position at sea, but perhaps it could be used as a watch
(15) or in some less rigorous circumstance.

(16) I viewed that argument as a sort of kind of
(17) interesting philosopher's type of argument, but one
(18) which had little to do with the biochemical empirical
(19) problem that I was trying to address. And in the
(20) intervening time since he wrote that, I have not found
(21) that to be — yet to be a more important question to
(22) address than other questions than I have spent time on.

(23) Q: But it is fair to say that your definition which
(24) discusses sort of removing a part from the whole is not
(25) symmetrical to the challenge facing natural selection.

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(1) which is starting from some precursor with some subset
(2) of parts and building up to the more complex structure?

(3) A: Well, the whole purpose of my definition was not to be a
(4) philosopher since I am not a philosopher. I was not
(5) trying to devise some rigorous set of words to describe
(6) something.

(7) I was trying to put a focus on what I saw to be an
(8) empirical problem for Darwin's Theory of Evolution by
(9) random mutation and natural selection. I imagine there
(10) could be other sets of words that would do that better,
(11) but I thought it to be quite sufficient to put a light
(12) on the problem that I saw.

(13) MR. ROTHSCHILD: Ed, one thing I meant to put on
(14) the record at the beginning is that Mike has served two
(15) rebuttal reports on the deadline as agreed by the
(16) parties. Obviously, that is very close in time to his
(17) scheduled deposition.

(18) While I have looked through them, I haven't had
(19) time to process them in the same way I have his initial
(20) expert report. And while I am not promising or
(21) threatening to do this, I do want to reserve the right
(22) of have another day of deposition to go over those
(23) rebuttal reports.

(24) MR. WHITE: I will object to that because it was
(25) served on you on time. You have your seven hours of

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deposition time pursuant to the rules.

MR. ROTHSCHILD: Obviously where rebuttal reports were filed by people who did not file the initial reports, there is a second seven hours available for their deposition. And I think the same rule applies for an expert like Mike or Bill Dembski who filed effectively a whole second report.

But we don't have to resolve that here. I just want to reserve our position on that.

MR. ROTHSCHILD: Could you mark this as the next exhibit?

(Behe Exhibit 4 was marked.)

BY MR. ROTHSCHILD:

Q: Mike, do you recognize the document I have marked as Behe 4?

A: Yes.

Q: What is it?

A: It is an interview. It is an interview that Mark Ryland did with me and had published in a publication called Our Sundry Visitor.

Q: That is a publication of the Discovery Institute's Center for Science and Culture?

A: No, it is a Catholic organization which puts that out.

Q: I just pulled it from the Discovery Institute site.

A: Yes, they have it placed there.

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Q: On the second page of the version of the article that I handed to you, there is a question what if the Intelligent Design (ID) movement, and you answer that question.

And in the second paragraph of your answer, you say we are told by "Science" with a capital "s" that the universe is just matter and energy in motion, but it turns out that actual evidence of science does not necessarily support that philosophical claim.

I am curious what you mean by science with a capital S.

A: Okay. Let me say here that the interview was pretty much written by Mark and passed by me for my approval. He wrote it in question/answer form. So the words he chooses are not necessarily the ones I myself would have chosen.

So I'm not quite sure how to interpret what he meant by that phrase we are told by Science with a capital S.

Q: I am correct that you reviewed this before it was published?

A: Yes, I did.

Q: Including Science with a capital S?

A: I reviewed it, yes.

Q: Sitting here today, you can't tell me what it means?

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A: I will not — the words really actually weren't my own I must say. I do not want to say what I thought was meant by that.

Q: Did you have any understanding of what was meant by that when you reviewed this?

A: Yes. It is a popular notion that science postulates that the universe is composed of matter and energy, and that specifically a claim which is often advanced in the name of science, that those are the only — the only entities that exist is also widespread.

An example of that I think is the television series which was introduced by the late astronomer Carl Sagan which he would begin by saying the universe is all that is, was and ever will be.

So in this interview for a popular audience, I think it was referred to here as this popular conception that science is materialistic.

Q: And when you use the materialistic, what do you mean by that?

A: Well, I mean that at bottom, the really existing entities are simply matter and energy, or matter, energy or whatever physicists understand them to be. That in fact, there is nothing beyond that that actually exists.

Q: And then again understanding that you may not have written this text, it says more specifically in my field

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of biology, the ID movement is beginning to question the claims of neo-Darwinian Evolutionary Theory.

Is that meant to describe you, is that an accurate description, your field of biology, or should it have been limited to biochemistry?

A: Yes, it should be limited to biochemistry. But most people who would read a magazine of this sort don't really distinguish between subdisciplines of biology.

Q: But again in terms of the claims you are making on behalf of Intelligent Design, they are limited to the biochemical arena?

A: That's correct.

Q: Turning to the top of the next page, you talk about or the article states that you talk about questions about undirected evolution that arose for you after reading a book by another scientist who was skeptical of Darwinism.

Who is that scientist?

A: A man name Michael Denton.

Q: Do you know whether Michael Denton is still skeptical of Darwinism?

A: I haven't spoken with him in a few years, but I have no reason to think that he's not.

Q: And then notwithstanding your audience, you do get into the discussion of biochemical structures and

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[1] biochemistry, and you say we know that to go from one
[2] kind of complex protein structure or function or cascade
[3] to another requires many changes. And then you say we
[4] can in effect quantify those changes and their
[5] probability.

[6] When you state that, is there a particular
[7] methodology you are referring to?

[8] A: Well, yes. It is fairly simple straightforward
[9] mathematics, the probability, what amino acid changes
[10] would have to be made in order to have one complex
[11] function turn into a completely different complex
[12] function.

[13] Q: And is this a methodology you developed, or is this one
[14] commonly used in the field of biochemistry?

[15] A: It is essentially mathematics. Regular mathematics.

[16] Q: In terms of the application of this mathematics to the
[17] biochemical principles you are talking about, could I
[18] find that methodology reported anywhere?

[19] A: You can find a portion of it in a paper in Protein
[20] Science that myself and David Snoke published recently.

[21] Q: And is there anywhere else I would find that methodology
[22] described?

[23] A: You can find it in a number of — well, let me back up
[24] and say you can find mathematics that would lead to
[25] similar conclusions as I speak about here if you applied

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[1] the mathematics to irreducibly complex systems.

[2] It is however uncommon for evolutionary biologists
[3] and people in the field to even consider irreducibly
[4] complex systems. They often times make the assumption,
[5] which is not explicitly justified, that single changes
[6] can either give beneficial or detrimental effects.

[7] In my paper with Snoke, we considered the
[8] situation where a system would have to undergo multiple
[9] changes before exhibiting a beneficial effect to the
[10] organism. When one does that, you get the — you can
[11] quantitate the probability.

[12] Q: We will go back to that article in a little bit.
[13] Towards the bottom of the page you talk about a problem
[14] for neo-Darwinism since by hypothesis there is no plan
[15] or purpose or intelligence and biological change.

[16] Am I correct in understanding that the concept of
[17] Intelligent Design does include the proposition of a
[18] designer acting with a plan or a purpose?

[19] A: Yes, that — if I may expand on that. You can tell that
[20] the designer had the purpose of producing the system
[21] that was produced. Just like whatever else you can tell
[22] about Mt. Rushmore, about the guy who did it, you can
[23] tell he had the purpose of producing those faces on the
[24] mountain.

[25] Q: And so using one of your examples, one can conclude that

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[1] the designer had the purpose of designing the bacterial
[2] flagellum?

[3] A: Correct.

[4] Q: And had a plan to develop that?

[5] A: Well, depending on how you define all these terms —

[6] Q: Your terms.

[7] A: I am sorry.

[8] Q: Your terms.

[9] A: Mark Ryland's terms. Yes, I think one could use that
[10] word plan.

[11] Q: Is Intelligent Design capable of describing what the
[12] designer's purpose was?

[13] A: Beyond producing the system itself, no.

[14] Q: Is Intelligent Design capable of describing the plan for
[15] developing the biological system?

[16] A: In this same thing, beyond the plan of producing the
[17] system, no.

[18] Q: Is Intelligent Design capable of determining the
[19] identity of the intelligent designer?

[20] A: Not at the present time.

[21] Q: Why do you qualify it in that way? What are you looking
[22] for that would allow —

[23] A: Further information might always come up. For example,
[24] as I write about I believe in a rebuttal report, there
[25] are a group of people who think that the designer is a

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[1] space alien, the Raelians.

[2] So if those space aliens communicated to us or if
[3] we in the future develop technology to fly to a distant
[4] planet and came across their civilization or some such
[5] thing, then we could have evidence of who that designer
[6] was. It may not be probable, but it is not
[7] theoretically excluded.

[8] Q: Intelligent Design doesn't base any of its propositions
[9] on Realian philosophies or beliefs; does it?

[10] A: No.

[11] Q: Raelianism is actually a religion; is it?

[12] A: I don't know. I don't think it is actually. It depends
[13] on what you mean by a religion. I am not sure.

[14] Q: Do you know whether Raelians describe their organizing
[15] principle as religious?

[16] A: I do not know for sure. As a matter of fact, I don't
[17] think they do. As a matter of fact, I think they are
[18] antagonistic towards religions as usually understood.

[19] Q: Does Intelligent Design Theory have anything to say
[20] about the possibility that space aliens could be the
[21] designers of molecular structures like the bacterial
[22] flagellum?

[23] A: Intelligent Design Theory right now simply states that
[24] these structures were designed and right now leaves open
[25] the question of who the designer was. It does not

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(1) foreclose it. It doesn't say we can't determine who it
(2) was. It just says we don't have enough evidence now to
(3) determine who it is.
(4) Q: And I take it that the conclusion of Intelligent Design
(5) at this time does not incorporate into its reasoning who
(6) the designer is?
(7) A: That's correct.
(8) Q: Going back to the space aliens, would space aliens of
(9) the kind you just described, would those be natural
(10) actors?
(11) A: Yes.
(12) Q: And would the conundrum then arise how did they come to
(13) be?
(14) A: It may or may not. As I am sure you know in one of —
(15) actually in the expert report I submitted, Francis
(16) Crick, whom you have mentioned earlier who was the Nobel
(17) Prize winning co-discoverer of the structure of DNA,
(18) proposed life on earth may have arisen by being seeded,
(19) purposely seeded, intelligently seeded by space aliens.
(20) And he published a paper, along with Leslie Orgel to
(21) that effect in a journal called Icarus in the early
(22) 1970's.
(23) In that paper, he said that — he addressed that
(24) same question of whether this would simply push back the
(25) question of the origin of the designers — or at least

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(1) the originators of life. For my purposes, you can just
(2) say that maybe they designed everything else, not just
(3) started life.
(4) But he said that well, even if it does push back
(5) the question nonetheless historically, it is of interest
(6) to determine how life started on earth. Even if we
(7) can't answer the question of where those aliens came
(8) from, nonetheless it is of interest to learn where life
(9) on earth came from.
(10) He also speculated that perhaps conditions were
(11) considerably different on the alien planet, and that
(12) perhaps life could have originated there without
(13) intelligent intervention. So at least theoretically, at
(14) least some smart person believed that did not
(15) necessarily push the question back continuously.
(16) Q: You have said yourself you don't find the space alien
(17) proposition particularly satisfying, correct?
(18) A: That's right.
(19) Q: Or the idea of some kind of time transfer, correct?
(20) A: I said I consider them to be implausible, yes.
(21) Q: When you made the presentation to residents of Dover,
(22) you were asked the question who is the designer,
(23) correct?
(24) A: I forget. I certainly may have been. I don't remember
(25) everything that was asked.

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(1) Q: Do you remember giving the answer in that session I
(2) think it is God?
(3) A: I don't remember. But I have certainly said that in the
(4) past. As a matter of fact, I say that in Darwin's Black
(5) Box. I said that while these other things are
(6) theoretically possible, most people, including myself,
(7) will conclude that the designer is likely to be God,
(8) yes.
(9) Q: And when you say that, what is the concept of God that
(10) you are holding? It is probably not George Burns. Who
(11) is God?
(12) A: Who is God? Of course, that question has vexed a lot of
(13) people for a long, long time.
(14) Q: What are the characteristics of the God you are
(15) referring to when you say I think it is God?
(16) A: What do you mean by characteristics? I am not sure.
(17) Q: What is in your mind when you say I think it is God?
(18) What are God's attributes?
(19) A: I am a Roman Catholic. So my conception of God is
(20) pretty much what Roman Catholicism holds. If you want a
(21) description of that, there are many, many books on
(22) theology and so on which are available. I am not a
(23) theologian.
(24) Q: Do you consider what you have described as the Darwinian
(25) Theory of Evolution to be inconsistent with your faith?

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(1) A: No. As a matter of fact, I used to believe that
(2) Darwinian Evolution was true. I was taught Darwinian
(3) Evolution in parochial school.
(4) After reading Denton's book, I saw there could be
(5) scientific objections against it which had never really
(6) crossed my mind because I had been taught the idea in
(7) college and graduate school and so on. So I became
(8) skeptical of it based on scientific reasons rather than
(9) theological ones.
(10) Q: You have raised a possibility, albeit skeptically, that
(11) space aliens is one possible designer. Could the
(12) intelligent designer be any natural actor we are
(13) currently aware of on earth?
(14) A: Could you clarify that? Do you mean people who are
(15) alive today or things who are alive today?
(16) Q: The types of creatures or living organisms that are
(17) alive today.
(18) A: Is it possible? Yes. In my book — and I should
(19) preface this by saying that I am not proposing this as
(20) something true, but, of course, often times in science
(21) things that appeared outlandish turned out to be true.
(22) So it is entirely possible as I say in my book as
(23) far as I know, that a human or a person with humanlike
(24) intelligence in the future could in fact design an
(25) organism.

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Scientists are currently making changes in organisms. There's a project out to try to construct a cell from scratch. So I think there's no reason for me to think that a person of human intelligence could not have designed living systems.

Now, of course, we are talking about the past. So one would have to also invoke something exotic like time travel. But as I said in my — I am not a physicist. But as I said in Darwin's Black Box, there have been speculations about time travel, and I referenced some Scientific American article, in the relevant communities of physicists.

So I know of no logical reason why a humanly intelligent agent with some special effects could not have designed the life we see.

Q: And the special effect you are referring to is time travel?

A: That's correct.

Q: And without time travel, that —

A: That would be difficult.

Q: Impossible, right?

A: Never say impossible in science. But I know of no way — it could have been.

Q: Even if we speculate on the possibility of time travel, there's quite a few sort of theoretical obstacles to

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that concept? For example, how did we get to that future creature, that future human.

A: Of course, when you talk about time travel, there is all sorts of paradoxes. I mention those in my book as well, things like grandsons shooting grandfathers and so on. Any science fiction movie will show you lots of paradoxes.

The point I was making there though is apparently serious physicists had been talking about the possibility. And I, as a lay person with regard to physics, could only say well, maybe that might be possible. And if it is possible, then the intelligent designer that I speak of could have been a natural creature.

And my point in saying that was to show that the argument I was making pointed simply to Intelligent Design. I was not making a theological or philosophical argument trying to prove the existence of God or any other supernatural being.

Q: Just thinking we may have to Michael J. Fox and Christopher Lloyd in as rebuttal experts, but we'll cross that bridge.

Then towards the bottom of this article that apparently Mr. Ryland penned for your attribution, at the very end of the article, you are quoted as saying we

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are at the very beginning of a paradigm shift in biology, and nobody really knows where this will end up.

What do you mean by a paradigm shift?

A: Well, a paradigm is essentially a way of seeing the world. And a paradigm shift is to go from one way of seeing the world to a different way of seeing the world.

For example, when Newtonian physics was thought to describe correctly —

Q: I am sorry to cut you off. I really want to know what you think the particular paradigm shift is as compared to — I am not criticizing you.

A: You didn't ask that. You just asked what I meant by a paradigm shift.

Q: Fair enough.

A: I am thinking that the paradigm shift is a changing from a view where we think that unintelligent mechanisms can completely account for what we find in life to one in which we see that intelligent effects are also necessary to account for what we see in life.

Q: We talked a while back about your submission to scientific journals of your work in the nucleic acid sequence area; correct?

A: Yes.

Q: And I want to now shift to the concept of Intelligent Design and ask you whether you have submitted any of

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your work on Intelligent Design to peer reviewed scientific journals?

A: Yes, I have.

Q: Describe those publications.

A: There were two of them. I submitted a manuscript similar to the one that became "Reply to My Critics" in Biology and Philosophy. I submitted that to the Journal of Molecular Evolution.

Q: Okay.

A: And I also was invited to submit a manuscript discussing Intelligent Design to a journal called Quarterly Review of Biology. I agreed to do so. But later, on the editor got back and said that the Editorial Board had decided that their journal would not publish arguments for Intelligent Design.

Q: Are those the two examples?

A: Yes. I should include my paper on protein science which I think — which is relevant to Intelligent Design.

Q: Let's start with that. The protein science article, that article does not actually mention Intelligent Design; correct?

A: That is correct. It just talks about problems with Darwinian Evolution.

Q: And so would you agree that that is not an article making the case for Intelligent Design?

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1 A: It makes a piece of the case, a small piece of the case.
 2 Q: And does that article ever use the term irreducible
 3 complexity?
 4 A: I was specifically told by a referee for the journal to
 5 remove the term irreducible complexity because it was
 6 controversial and had appeared in my book. In the
 7 original article I had written, it did in fact appear.
 8 Q: And did it actually — was that term used in conjunction
 9 with an actual biological system that you were
 10 researching?
 11 A: This was a theoretical paper which used a mathematical
 12 model to discuss protein evolution.
 13 Q: So am I correct in understanding though that that paper
 14 didn't report any original data or research?
 15 A: Well, yes, it did. It reported our original
 16 calculations on these sorts of systems.
 17 Q: It didn't do any sort of laboratory experiments?
 18 A: No, it was a theoretical paper.
 19 Q: What was your understanding why you couldn't use that
 20 term irreducibly complex?
 21 A: The only thing I can tell you is what the reviewer told
 22 me. It was a controversial term that had appeared in my
 23 book, and that it should not appear in the paper.
 24 Q: Did you argue with him?
 25 A: No.

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1 Q: Am I correct in understanding that sort of the purpose
 2 of this article was to show a challenge to Evolution
 3 through Darwinian processes?
 4 A: I am sorry. Could you say that again?
 5 Q: Am I correct in understanding that the purpose of this
 6 article was to show a challenge to Evolution through
 7 Darwinian processes?
 8 A: Yes.
 9 Q: And the challenge was to the process of binding of
 10 proteins?
 11 A: That was one of the possibilities. The paper concerned
 12 the development of features of proteins that required
 13 multiple amino acid changes from the parent protein.
 14 One of those features could have been protein binding
 15 surfaces.
 16 Q: You write in the article, and it's attached as
 17 Exhibit 10 to your report, that — and I am now reading
 18 from page 2657 at Exhibit 10.
 19 A: Okay.
 20 Q: The bottom corner, the discussion with the heading The
 21 Model and Its Limits, you state our model is restricted
 22 to the development of MR features by point mutation in a
 23 duplicated gene. We strongly emphasize that results
 24 bearing on the efficiency of this one pathway as a
 25 conduit for Darwinian Evolution say little or nothing

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1 about the efficiency of other possible pathways.
 2 A: Thank you.
 3 MR. WHITE: Just let him catch up to you, please.
 4 A: I missed the place. That's correct.
 5 BY MR. ROTHSCHILD:
 6 Q: So this paper it would be fair to say doesn't make the
 7 case against Darwinian Evolution generally, it just
 8 attempts to demonstrate the challenge of one potential
 9 pathway?
 10 A: It concerns one pathway which is often times spoken of
 11 in the literature as a prime way in which new proteins
 12 and new protein functions could arise. So the purpose
 13 of this was to show that that assumption, which is
 14 prevalent in the biological community, has unconsidered
 15 problems. That's correct.
 16 Q: But doesn't consider the other pathways?
 17 A: It limits itself to the one pathway.
 18 Q: And in terms of that one pathway, what was the
 19 conclusion that you and your coauthor arrived at?
 20 A: The conclusion in a nutshell was that when more than one
 21 mutation is required in a duplicated gene for the
 22 acquisition of a new biochemical feature, that it would
 23 require large population sizes and/or long numbers —
 24 large numbers of generations, much time in order to
 25 produce such a feature.

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1 And that as the feature required more and more
 2 changes, then the population sizes and length of time
 3 became prohibitive.
 4 Q: Prohibitive meaning?
 5 A: That it would be larger than most populations of
 6 organisms on earth, and the time would require longer
 7 than geological — longer than life has existed on
 8 earth.
 9 Q: Does any of the biological systems being discussed here
 10 fall under your definition of irreducibly complex?
 11 A: Well, it is related to the question of irreducible
 12 complexity. In my book when I talk about irreducibly
 13 complex, I was really oversimplifying much of the case.
 14 That the difficulty I see for Darwinian Evolution is in
 15 fact much more severe than I made it out to be.
 16 When I talked about irreducible complexity in
 17 Darwin's Black Box, I focused on the different parts of
 18 a system such as the flagellum, which would be required
 19 for it to function. However, I did not spend much time
 20 talking about the ways in which the part of the systems
 21 would specifically recognize each other.
 22 Machinery in our everyday world is assembled by
 23 intelligent agents. But molecular machinery in the cell
 24 has to self assemble. This is a requirement above and
 25 beyond the functioning of the molecular system itself.

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(1) In order for multiple parts to recognize each
(2) other, areas of the surfaces have to be complementary,
(3) chemically and physically complementary to each other.
(4) Usually that involves multiple amino acid
(5) residues. Amino acids are the subunits which comprise
(6) proteins. The difficulty for Darwinian Evolution is
(7) when one has to change multiple things before one gets a
(8) selectable function, a function that helps out an
(9) organism.

(10) In my book, I focused on the multiple changes at
(11) the protein level which would have to take place in
(12) order to get a functioning protein system. One could
(13) also look at it at the amino acid level to ask does one
(14) need multiple changes simply to assemble the system in
(15) the first place.

(16) So the general problem for Darwinian Theory is the
(17) same at the protein level in the question of developing
(18) protein, protein interactions because multiple changes
(19) would have to occur in order for — in general for
(20) proteins to bind to each other. So it is a related
(21) concept. It is a related concept.

(22) Q: So to summarize, there is even more steps required for
(23) Darwinian Evolution than you suggest in Darwin's Black
(24) Box?

(25) A: Yes.

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(1) Q: Transferring to the Intelligent Design concept, does
(2) this mean that there are similarly many interventions
(3) required by the designer to create the systems that you
(4) are referring to?

(5) A: What do you mean by intervention?

(6) Q: Actions by the designer.

(7) A: Do you mean actions during the course of life's history
(8) or independent actions? I am not sure.

(9) Q: Actions in the development of any particular system that
(10) you are using as an example.

(11) A: I don't think one can tell. One can imagine. One can
(12) speculate that there are systems say like software
(13) systems which are intelligently written at one period of
(14) time, but whose features only become active at later
(15) periods of time.

(16) So as far as Intelligent Design is concerned, one
(17) can't tell whether there were multiple, or one, or even
(18) zero interventions depending on how you want to define
(19) the word intervention by an intelligent agent in life.

(20) Q: The manuscript that was submitted to the Journal of
(21) Molecular Evolution you said was similar to what we have
(22) as Exhibit 8 to your report; correct?

(23) A: Yes.

(24) Q: Was that manuscript rejected by the Journal of Molecular
(25) Evolution?

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(1) A: Yes.

(2) Q: Were you told why?

(3) A: I was sent a copy of the referee's report.

(4) Q: What was your understanding of why it was rejected?

(5) A: I would have to refresh my memory, but the editor of the
(6) Journal of Molecular Evolution sent it not out to a
(7) reviewer, but to another member of the Editorial Board
(8) who very strongly objected to the idea of Intelligent
(9) Design, who talked about God and various religious
(10) concepts in his report.

(11) I had not mentioned any of those in my paper. My
(12) paper was a shortened version in which I focused on the
(13) blood clotting cascade and my conversations with a man
(14) named Russell Doolittle, who was a scientist who works
(15) on the blood clotting cascade.

(16) The reviewer, it's my impression again — I have
(17) to look back at it — had very strong philosophical
(18) objections to the concepts I was discussing.

(19) As a matter of fact, he had objections to what I
(20) had written in Darwin's Black Box, which did not appear
(21) in the paper that I had submitted to the Journal. And
(22) he was mostly arguing against those, rather than in the
(23) content of the manuscript that I had submitted.

(24) Q: The version of the article that eventually appears in
(25) Biology and Philosophy actually does discuss God and the

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(1) supernatural to some extent; is that correct?

(2) A: That's correct.

(3) Q: That is different than what you submitted to JME?

(4) A: That's correct.

(5) Q: Have we now exhausted all of the articles that you have
(6) ever submitted to peer reviewed scientific journals on
(7) the subject of Intelligent Design?

(8) A: That's correct.

(9) Q: And also exhausted any requests you received from
(10) journals to publish on the subject?

(11) A: I think so, yes.

(12) Q: I am not sure whether you would differentiate — and you
(13) can tell me if you don't — but have you published —
(14) submitted any peer reviewed articles on the subject of
(15) irreducible complexity?

(16) A: I am glad you brought that up. I submitted several and
(17) they were published in peer review journals in
(18) Philosophy of Science journals. The Philosophy of
(19) Science journals that I have submitted to I find to be
(20) much more tolerant to objections to Darwinian Theory
(21) than the scientific journals that I have submitted to.
(22) That is why several of my papers appear there.

(23) Q: Have any of the articles you have submitted to peer
(24) reviewed journals contain any empirical research?

(25) A: They contain lots of empirical research. I discussed

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1) the blood clotting system and bacterial flagellum and so
2) on.
3) Q: Let me amend that to your own empirical research.
4) A: Let me just think. Could you rephrase the question?
5) There are some articles, I am not sure if they would fit
6) under the category.
7) Q: Have you submitted any articles to peer reviewed
8) scientific journals on the subject of either Intelligent
9) Design or irreducible complexity that report your own
10) original empirical research?
11) A: So it is scientific journals now?
12) Q: Yes.
13) A: I have submitted empirical research to scientific peer
14) reviewed journals which questioned aspects of Darwinian
15) Theory, but not ones which make a positive argument for
16) irreducible complexity.
17) Q: And when you say you have submitted articles to peer
18) reviewed journals questioning aspects of Darwinian
19) Theory, do those contain original research?
20) A: Yes.
21) Q: What articles are you referring to?
22) A: There's an article in the Journal of Molecular Biology.
23) I have forgotten the title. It concerns histone H4 and
24) its amino acid sequence and its ability to tolerate
25) changes.

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1) Q: When was that published? I should say was it published?
2) A: Yes, it was. It was published in the Journal of
3) Molecular Biology in 1996.
4) Q: Anything else that fits that description?
5) MR. WHITE: Why don't you clarify for the reporter
6) which one you were talking about?
7) A: It is Agarwal and Behe, 1996, Nonconservative Mutations
8) are Well Tolerated in the Globular Regions of Yeast
9) Histone H4. It is published in the Journal of Molecular
10) Biology, Volume 255, pages 401 to 411.
11) BY MR. ROTHSCHILD:
12) Q: Are there any other articles that would be responsive to
13) the question I asked?
14) A: I think that is all.
15) Q: Are you aware of any publications by any other
16) scientists submitted to peer reviewed scientific
17) journals on the subject of Intelligent Design?
18) A: There are two others — three. Let me think. There's
19) one on — can you repeat the question? I am sorry.
20) MR. ROTHSCHILD: Please read that back, please?
21) (The question, "Are you aware of any publications
22) by any other scientists submitted to peer reviewed
23) scientific journals on the subject of Intelligent
24) Design," was read by the reporter.)
25) A: On the subject of Intelligent Design, no.

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BY MR. ROTHSCHILD:

1) Q: You are aware that there was an article that was
2) submitted by Stephen Meyer to proceedings of the
3) Biological Society of Washington?
4) A: Yes.
5) Q: Reminding of that, would that fit the description I
6) gave?
7) A: Yes. I am sorry.
8) Q: Did that article report any original research?
9) A: I actually haven't read the whole article, but I think
10) so. I think it is an analysis of existing research.
11) Q: Not original research?
12) A: It is an analysis of existing research, yes.
13) Q: And not his original research?
14) A: That's correct.
15) Q: Do you consider Stephen Meyer a scientist?
16) A: Yes. He has a degree in geology I think from — I have
17) forgotten exactly where he worked. He worked as a
18) geophysicist for an oil company for a number of years
19) before pursuing an advanced degree in philosophy of
20) science.
21) Q: Do you understand his article on the subject of
22) Intelligent Design to involve any principles of geology
23) or geophysics?
24) A: I am not a geologist or geophysicist so I wouldn't know.

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1) Q: You have never even read this article?
2) A: I have not read it in full, no. I have only read it in
3) part.
4) Q: You do consider that an example of a peer reviewed
5) article on the subject of Intelligent Design?
6) A: From news reports I have read, yes.
7) Q: That is the only one that you are aware of?
8) A: There are lots of articles related to — that impinge on
9) the question of Intelligent Design. But as the reaction
10) to Meyer's paper shows, if one uses the phrase
11) Intelligent Design in a journal in the scientific
12) community, all sorts of red flags are raised. People
13) get very excited. And there is a lot to deal with.
14) So no, I do not know of anybody else who has taken
15) on the problems of inserting the phrase Intelligent
16) Design in their papers.
17) Q: So it is your view that the reason that Intelligent
18) Design can't find its way into peer reviewed scientific
19) journals is the scientific prejudice against that?
20) A: That is one large reason, yes.
21) Q: Anything else?
22) A: Another reason is that most scientists are educated not
23) to think of Intelligent Design or to think strictly in
24) Darwinian terms. So that even when they speak of
25) systems and make analogies between the systems they have

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[1] discovered in life and intelligently designed systems
[2] that we see in our human world, they don't make the case
[3] for Intelligent Design.
[4] Q: In Darwin's Black Box, you make a number of statements
[5] about scientific publications. And you are welcome to
[6] turn in the book, if you like.
[7] On page 185, you say scientific authority rests on
[8] published work, not on the musings of individuals.
[9] Do you recall making that statement?
[10] A: Where is that, page 185?
[11] Q: Yes. It is in the second full paragraph about a little
[12] less than two-thirds of the way down.
[13] A: Yes.
[14] Q: Is that a statement you stand by?
[15] A: Yes.
[16] Q: And then you say on the next page in effect, the theory
[17] — this is the very last sentence in the chapter — in
[18] effect, the Theory of Darwinian Molecular Evolution has
[19] not published, and so it should perish?
[20] A: I did write that. It is an excellent sentence.
[21] Q: And is a sentence you still stand behind?
[22] A: Yes.
[23] Q: If you turn back to page five.
[24] A: Page five?
[25] Q: Yes, in your book. You say if you search the — this is

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[1] in the first full paragraph right around halfway down.
[2] If you search the scientific literature on
[3] Evolution, and if you focus our search on the question
[4] of how molecular machines, the basis of life develop,
[5] you find and cry and complete silence. Another pretty
[6] powerful sentence.
[7] A: Thank you.
[8] Q: That is one you also stand by?
[9] A: Well, I think that's more of a — that depends on
[10] interpretation. By that I meant serious efforts at
[11] determining how complex molecular machinery might have
[12] developed by Darwinian processes.
[13] I did not mean speculations, or even extended
[14] speculations, or sequence comparisons without
[15] considering the question of how natural selection would
[16] work to construct the system and so on.
[17] As I say elsewhere in the book, there have been a
[18] number of papers published under general topic of
[19] molecular evolution, but if one looks at them from the
[20] point of view of trying to discover an actual pathway
[21] that Darwinian mechanism would have used to construct
[22] these systems, one comes up empty.
[23] So maybe the words cry and so on were — I guess
[24] one is a writer, and I try to entertain the audience as
[25] well. It is my view that it continues to be the case

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[1] that there are no serious and detailed studies showing
[2] how these things could have come about.
[3] Q: There are a lot of articles about molecular evolution;
[4] correct?
[5] A: Yes. As I wrote in the book.
[6] Q: And so your quarrel with that body of work is that it is
[7] not sufficiently detailed or explanatory on the subject
[8] of the Darwinian mechanism of natural selection?
[9] A: That is the only point that my book addresses. So yes,
[10] that is exactly the point that I focus on. I consider
[11] the Darwinian mechanism to be the crux of the claim that
[12] unintelligent processes can account for what people —
[13] many people think, even many people who are not
[14] Intelligent Design proponents think to appear to be
[15] designed.
[16] Q: Let's take an example like the bacterial flagellum.
[17] Explain to me what would be required from the literature
[18] to reverse your criticism.
[19] MR. WHITE: Objection. What literature are you
[20] talking about?
[21] BY MR. ROTHSCHILD:
[22] Q: The scientific literature that he said is inadequate.
[23] Set the bar for me.
[24] A: Well, there are a number of things. I'm not sure I can
[25] say without actually looking at the papers themselves.

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[1] One good start would be an experimental demonstration
[2] that say a new relatively simple complex system with
[3] multiple interacting parts, parts which bound to each
[4] other specifically, could arise by random mutation and
[5] natural selection.
[6] For example, in my paper with David Snoke, I talk
[7] about new protein protein binding sites. And we express
[8] our skepticism that such processes could develop in a
[9] Darwinian fashion by what is commonly considered to be
[10] a likely route of gene duplication in a reasonable
[11] amount of time with a reasonable amount of organisms.
[12] If somebody could demonstrate a new molecular
[13] machine that contained four proteins that didn't
[14] interact already would come together and bind to give a
[15] new activity where there was none before, then I would
[16] start to sit up and take notice.
[17] The bacterial flagellum have several dozen
[18] different proteins involved in its construction and its
[19] structure. So if somebody could come up with something
[20] more simple than that and experimentally show that was
[21] feasible, then I would begin to wonder if something of
[22] the structure of flagellum could also develop by such
[23] processes.
[24] Q: I can't promise I will get this question right, but I
[25] will give it a try.

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(1) Is it fair to say that you require a sort of
(2) laboratory demonstration of the development of these
(3) kind of systems as opposed to a more historical
(4) description that relies on — I think it would be
(5) correct to say — phylogenetic analysis to explain a
(6) potential pathway?

(7) A: That is exactly correct. I think phylogenetic analyses
(8) do not at all speak to the question of whether Darwin's
(9) mechanism of random mutation and natural selection could
(10) have built up complex structures.

(11) They may give interesting insights into what
(12) structures — what proteins might have structures
(13) similar to other structures, but they do not address the
(14) question of how such complex systems could have been
(15) produced by an unintelligent mechanism.

(16) Q: They instead infer that mechanism as opposed to
(17) demonstrating it?

(18) A: They assume it. They don't infer it.

(19) Q: Can we also agree that if Intelligent Design does not
(20) publish, it perishes?

(21) A: That's correct. But I might add that an idea of
(22) Intelligent Design is relatively young. It is currently
(23) viewed in a very skeptical and hostile light by many
(24) people in the scientific community.

(25) So I think that over time if it publishes, if over

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(1) time if it has been say a hundred years or so and it has
(2) not come up with significant — well, let me rethink
(3) that. I am getting ahead of myself.

(4) Let me say this: It's my view that Intelligent
(5) Design has pretty much already been demonstrated in the
(6) structures that we have discovered in life such as the
(7) ones I discussed in Darwin's Black Box.

(8) The situation as I view it is that many people in
(9) the scientific community think that the design which
(10) they see, the design which many people admit the
(11) appearance of is an illusion. They think they have an
(12) alternative mechanism.

(13) The alternative mechanism they propose, as I have
(14) discussed in my book, has precious little experimental
(15) results to back it up. The way I view the situation
(16) then is that science has lots and lots and lots of
(17) evidence for Intelligent Design already in the
(18) structures of the biochemical systems, but only
(19) speculations and assumptions that some other
(20) unintelligent mechanism can account for it.

(21) So I view Intelligent Design as essentially the
(22) obvious answer for many questions in biology,
(23) biochemistry which —

(24) Q: Which, biology or biochemistry?

(25) A: Biochemistry. Which is being ignored because people are

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(1) looking in the wrong place. So it is my view that
(2) Intelligent Design does not have to come up with any
(3) particular paper. I do not have to come up with any
(4) particular result in my own laboratory to demonstrate
(5) design.

(6) The design is demonstrated in the many, many
(7) molecular systems have been elucidated by the community
(8) of scientists at large.

(9) Q: Is that a long way to answer the question no, ID does
(10) not have to publish; even if ID does not publish, it
(11) does not perish?

(12) A: No, that is not a long way to say that. It is just to
(13) say that ID has published kind of pseudonymously
(14) (spelled phonetically), however one would pronounce that
(15) word.

(16) When you look at journals such as Cell that I
(17) included in my expert report, when you see dozens of
(18) papers that use the word molecular machines which liken
(19) machines to ones designed by humans which point out many
(20) analogies between such systems and ones we know to be
(21) designed, I consider that to be papers on Intelligent
(22) Design.

(23) Q: You said there is not — there's lots of evidence for
(24) Intelligent Design. I think what you meant was exactly
(25) what you just said, the many papers in Cell and the

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(1) like?

(2) A: Yes.

(3) Q: And there is no evidence of natural selection operating
(4) at the biochemical level?

(5) A: I did not say that.

(6) Q: I apologize then. Is there evidence of natural
(7) selection?

(8) A: There certainly is.

(9) Q: What evidence is that?

(10) A: Well, one good piece of evidence of natural selection at
(11) the molecular level is, for example, the sickle cell
(12) mutation in hemoglobin. Sickle cell hemoglobin differs
(13) from normal hemoglobin by one amino acid change in the
(14) beta chain of hemoglobin.

(15) That allows hemoglobin to self-associate in the
(16) red blood cell when it is invaded by a malarial parasite
(17) and be destroyed in the spleen. And therefore, it seems
(18) to give a benefit to people in malarial infested areas
(19) even though the homozygote for sickle hemoglobin — that
(20) is a person who has two genes for sickle cell disease —
(21) for a sickle cell hemoglobin is severely ill and
(22) generally dies before reproducing.

(23) If you look at maps of the prevalence of the
(24) sickle cell gene and the prevalence of malaria, their
(25) correspondence is pretty striking. I, myself, consider

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[1] that a good example of natural selection at the
[2] molecular level.
[3] Q: Is that an example of a new protein binding site?
[4] A: That is correct. It is.
[5] Q: And in an example like that, does that rule out
[6] Intelligent Design of that structure when you can
[7] formulate a case for natural selection?
[8] A: It rules out the requirement that an intelligent agent
[9] had to have been involved in producing that. You can
[10] never rule out Intelligent Design of any action.
[11] Somebody might put a pile of garbage somewhere
[12] that you think was blown there by the wind, but they put
[13] it there because they like it there.
[14] As I write in Darwin's Black Box, the scientific
[15] problem is not ruling out design. The scientific
[16] problem is not to say what you think has not been
[17] designed, but what you think has required design.
[18] Q: But you can never rule out Intelligent Design?
[19] A: That's correct.
[20] Q: The proposition regarding the hemoglobin that arose
[21] through natural selection is possible, but it could also
[22] have just been the product of an intelligent designer?
[23] A: As I said before, you can never rule out Intelligent
[24] Design. But my view of the sickle hemoglobin situation
[25] is that there is no reason to assume, unless you are a

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[1] conspiracy theorist or something, there is no reason to
[2] assume that intelligence was involved.
[3] Q: And there is a fair amount of evidence of natural
[4] selection at the biological level; is that true?
[5] A: Yes. Natural selection is clearly something that
[6] exists. It clearly explains some things.
[7] Q: At the biological level?
[8] A: Yes.
[9] Q: We will get into that in a little more detail later.
[10] But given the fact that natural selection has been
[11] demonstrated at the biological level, does that mean the
[12] explanation of Intelligent Design has no place in the
[13] discussion of biological development?
[14] A: Biological development is an enormously large topic, and
[15] some aspects of it I think would require — well, would
[16] impinge on assertions of Intelligent Design.
[17] Development — as everything in biology,
[18] development is controlled at the molecular level by
[19] proteins and nucleic acids and so on. And one has to be
[20] very careful and specific about which systems one is
[21] talking about before you can make any conclusions about
[22] that.
[23] Q: We will get back to that in a little bit.
[24] MR. WHITE: Eric, we have been going about an hour
[25] and a half.

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[1] MR. ROTHSCHILD: Let me just ask one more set of
[2] questions, and then this would be a great time to break
[3] for lunch, which is hopefully here.
[4] BY MR. ROTHSCHILD:
[5] Q: I appreciate you have shown great stamina through the
[6] process. Have you conducted any experiments to
[7] demonstrate Intelligent Design?
[8] A: Intelligent Design is not demonstrated through an
[9] experiment. It's demonstrated by elucidating the
[10] structure of a system.
[11] For example, going back to Mt. Rushmore, one would
[12] not need to do an experiment to conclude that Mt.
[13] Rushmore was designed. The evidence for design is in
[14] the parts of the system and how they interact to make a
[15] functioning whole.
[16] So the argument for Intelligent Design rests on
[17] the structures that have been elucidated in
[18] biochemistry.
[19] Q: When you use the word elucidated, do you mean described?
[20] A: Yes, something like that.
[21] Q: I take it the answer is no, I have not conducted any
[22] experiments to demonstrate Intelligent Design?
[23] A: Yes.
[24] Q: And I take it you haven't devised any experiments to
[25] demonstrate Intelligent Design?

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[1] A: I have in my paper with David Snoke gone a step of the
[2] way towards trying to delimit the places where we might
[3] look for Intelligent Design to ask what sorts of changes
[4] would be too large to expect an unintelligent process to
[5] account for.
[6] At that point, we might start to consider where
[7] Intelligent Design resides in biochemistry. So I would
[8] say that yes, in fact, I have done work on trying to
[9] elucidate Intelligent Design.
[10] Q: And you would agree that particular article, it is a
[11] very small step towards that conclusion?
[12] A: I would not want to characterize the size of the step.
[13] Q: Last question. Are you aware of any experiments by
[14] anybody else that demonstrate Intelligent Design or
[15] purport to?
[16] A: I am aware of lots of experiments that in my opinion do
[17] demonstrate Intelligent Design. And a number of them
[18] are cited in my book Darwin's Black Box. They are the
[19] experiments which describe the structures of the
[20] molecular machinery that has been found in the cell.
[21] Q: Other than that, no?
[22] A: That's quite a bit.
[23] Q: Those studies don't purport to demonstrate Intelligent
[24] Design?
[25] A: The authors themselves do not claim that, yes.

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1) (A recess was taken.)

2) AFTERNOON SESSION

3) BY MR. ROTHSCILD:

4) Q: Good afternoon, Mike.

5) A: Good afternoon.

6) Q: I just want to go back to the discussion you had about

7) what kind of experimental evidence would cause you to

8) rethink your conclusions about Intelligent Design.

9) And if I understood you correctly, you said if it

10) could be demonstrated that a new molecular machine with

11) four newly binding proteins could be demonstrated in the

12) laboratory, that would cause you to start rethinking?

13) A: Yes.

14) Q: Why four?

15) A: Well —

16) Q: I don't want you to go to eight.

17) A: Because that is a sufficient number to get beyond the

18) reach that I see of random — just random, small

19) mistakes causing a couple of proteins to stick together.

20) For example, you mentioned sickle hemoglobin. On

21) occasion, you can get one protein to stick to another,

22) especially if it is in high concentration, kind of

23) nonspecifically. To get four to stick together would in

24) my mind entail enough specificity to make sure we were

25) talking about a complex functional system.

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1) Q: And you also I think used the term that they would have

2) to be interacting, they just couldn't be four proteins

3) that got brought together, is that right?

4) A: I am not sure what you mean by got brought together.

5) Q: Did you say that they would have to be interacting to

6) meet this standard?

7) A: Yeah, but that I meant they had to specifically bind to

8) each other to the exclusion of other proteins.

9) Q: Is that concept of interacting part of your definition

10) of irreducible complexity?

11) A: Yes, it is.

12) Q: It's actually captured in the written definition?

13) A: Can I look at the written definition again to refresh my

14) memory?

15) Q: Absolutely.

16) A: What page is that on again?

17) Q: 39.

18) A: Thank you.

19) MR. WHITE: Eric, are you speaking about the

20) tweaked definition or the untweaked?

21) MR. ROTHSCILD: Whatever he wants to use.

22) A: Yes, it is in there interacting. By irreducible

23) complexity, I mean a single system composed of several

24) well matched interacting parts that contribute to the

25) basic function.

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BY MR. ROTHSCILD:

1) Q: And the interacting there is referring to proteins?

2) A: Well, it doesn't actually refer to proteins itself. One

3) can talk about mousetraps with this. But in the context

4) of a molecular machine, yes, proteins.

5) Q: I want to go over some of the terms that are in play in

6) this dispute and are in your expert report. If you

7) could turn to page 15 of your expert report in the black

8) binder?

9) A: Okay.

10) Q: Section two is titled Intelligent Design is not

11) Creationism. When you make that assertion, can you just

12) tell me what definition of Creationism you are using?

13) A: As it says on page 15 in the second complete paragraph,

14) in popular usage, a Creationist is a person who thinks

15) the world is relatively young, on the order of 10,000

16) years. And that the major categories of organisms were

17) created ex nihilo by a supernatural being God. That is

18) what I mean by Creationism.

19) Q: And does Creationism require that — entail —

20) necessarily entail both of those concepts, young earth

21) and major categories of organisms created ex nihilo?

22) A: In popular usage, I think that is what is generally

23) understood by the term. There are a number of people

24) who define it in their other ways. But I was using what

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1) I thought was the popular definition of the term.

2) Q: Using that definition, Intelligent Design is not

3) Creationism?

4) A: That is correct.

5) Q: When you refer to the belief that major categories of

6) organisms were created ex nihilo by a supernatural

7) being, can you explain what you mean by that?

8) A: By that, I mean that there existed no organism and then

9) an organism was present.

10) Q: So another way of phrasing that, that an organism began

11) abruptly, and they are sort of basic type, fish with

12) fins, bird with wings?

13) A: No, you can't say quite that. Ex nihilo creation is not

14) just an abrupt appearance in the fossil record. Ex

15) nihilo is really kind of a theological term which means

16) that matter was created in a fundamental supernatural

17) sense by God.

18) Just seeing in the fossil record that something

19) was not there and something was, in my view does not

20) allow one to say that it was ex nihilo Creationism.

21) Q: Maybe I phrased that poorly with the word appearance.

22) Is it basically the same as saying that forms of life

23) began abruptly in their basic types, bird with wings and

24) feathers and fish with scales and fins?

25) A: I am little confused. Do some people think that, or is

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(1) that what I was thinking?
(2) Q: Is that creation ex nihilo?
(3) A: I think one has to be careful that one can have creation
(4) ex nihilo which could mean that an organism was there
(5) one second and next second — was not there one second
(6) and the next second was there with its characteristics.
(7) But one cannot say that that is the only way that some
(8) organism might be present — or you might find evidence
(9) for an organism which appeared suddenly.
(10) There might be other explanations for sudden
(11) appearance, especially in the fossil record, other than
(12) ex nihilo creation.
(13) Q: I want to keep the fossil record out right now. I am
(14) trying to make sure I understand that if someone
(15) believed that life began abruptly, not the evidence, but
(16) life began abruptly —
(17) A: Life itself.
(18) Q: — in their major types, humans with their
(19) characteristics, or fish with fins or birds with wings,
(20) is that creation ex nihilo?
(21) A: Not necessarily. Again, I am afraid there's lots and
(22) lots of distinctions in this area.
(23) One could imagine a space alien coming down and
(24) assembling the parts of a cell, the parts of a complex
(25) organism. Again, we ourselves manipulate life on earth.

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(1) If there is in fact an advanced natural civilization
(2) somewhere, it could be that they made organisms — even
(3) complete organisms by manipulating preexistent matter.
(4) So that would not be ex nihilo creation.
(5) Q: What I described with life beginning abruptly, birds
(6) with wings, etcetera could be creation ex nihilo, could
(7) be the space aliens, could be the time travelers; is
(8) that?
(9) A: That's correct. That's correct.
(10) Q: You also write that some people use the word Creationism
(11) more broadly to indicate any belief that a supernatural
(12) being has affected nature in any way.
(13) Using that definition, is Intelligent Design
(14) Creationism?
(15) A: Using that definition?
(16) Q: Yes.
(17) A: No, it is not. Because, again, Intelligent Design does
(18) not require that a designer be a supernatural entity.
(19) Q: Although it certainly contemplates that was a likely
(20) possibility?
(21) A: Well, Intelligent Design is not a real person. There
(22) are individual people who think Intelligent Design is a
(23) reasonable explanation who also think that — will weigh
(24) various possibilities and come to the conclusion that
(25) perhaps such an explanation is likely.

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(1) Q: A supernatural explanation?
(2) A: That's correct.
(3) Q: And that would include yourself?
(4) A: Yes. As I said, I do think that the designer was indeed
(5) God.
(6) Q: Are you familiar with the term creation science?
(7) A: Yes.
(8) Q: What is your understanding of that term?
(9) A: It's — I can't give a dictionary definition of it.
(10) From what I understand, it is the effort to show that
(11) aspects of the natural world are consistent with the
(12) Biblical account of creation, specifically in the
(13) Christian Bible, in Genesis.
(14) Q: Turn to page 11 of your report.
(15) A: (Witness complies.)
(16) Q: On page 11, you take the position that Intelligent
(17) Design is a scientific theory; correct?
(18) A: That's correct.
(19) Q: And am I correct that the definition of scientific
(20) theory that you are using is stated under section 1.2.2,
(21) the analysis of a set of facts and their relation to one
(22) another?
(23) A: That is a theory. And then I say that a scientific
(24) theory is a theory which is constructed solely on the
(25) foundation of empirical facts about the natural world

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(1) and logical inferences.
(2) Q: So when you say it is a scientific theory, it is that
(3) definition, a theory constructed solely on the
(4) foundation of empirical facts about the natural world
(5) and logical inferences?
(6) A: Yes.
(7) Q: And where do you derive that definition from, or is it
(8) created by you ex nihilo?
(9) A: As I reference in the report number 13, I have a
(10) reference to a dictionary definition for theory. And in
(11) part, I reference my own argument in the Journal of
(12) Biology and Philosophy as to what I consider to be a
(13) scientific theory.
(14) Q: But I want to be very precise here because if I
(15) understood your testimony a few moments ago, you are
(16) distinguishing between theory and scientific theory?
(17) A: That's correct.
(18) Q: And the definition that you — that footnote 13 pertains
(19) to, which I believe is a dictionary definition, is for
(20) theory generally, but not for scientific theory?
(21) A: That's right.
(22) Q: So your definition of scientific theory is the one that
(23) you state in the Journal of Biology and Philosophy?
(24) A: That's correct.
(25) Q: What I want to know is where did you get that definition

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1) from?
2) A: It is one that I have derived from my experience in
3) science and my experience with reasoning about the
4) natural world.
5) Q: So it is not a definition that you found in a
6) dictionary?
7) A: That's correct. As many philosophers of science will
8) tell you, it is extremely difficult to define science.
9) And so I offered this as a definition based on my own
10) experience.
11) Q: Okay. Scientific organizations have made an effort to
12) define scientific theory; haven't they?
13) A: Well, I don't think so. Well, if they have, I haven't
14) seen one which was very sophisticated.
15) Q: At page eight of your report, you state that the word
16) theory is sometimes used in science to indicate in the
17) words of the National Academy of Sciences — quote — a
18) well substantiated explanation of some aspect of the
19) natural world that can incorporate facts, laws,
20) inferences and tested hypotheses.
21) You are familiar with that one?
22) A: Yes.
23) Q: Is it your testimony that that is not a particularly
24) sophisticated definition?
25) A: That's correct.

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1) Q: You prefer your own to the definition that is suggested
2) by the National Academy of Sciences?
3) A: Well, as I explain in the section, section 1.1, how the
4) word theory is used in the scientific community,
5) although the National Academy in their argument about
6) Evolution teaching in the schools defines a theory in
7) the way that you just mentioned, in actual scientific
8) practice, the word theory has a number of different
9) usages.
10) And so my use of the word theory tries to be broad
11) in scope to encompass not only the specific instances
12) that the National Academy has in mind, but others as
13) well.
14) Q: So is it fair to say that more scientific concepts would
15) fall under the umbrella of the word theory using your
16) definition than the definition we just read from the
17) National Academy of Sciences?
18) A: Yes.
19) Q: Substantially more?
20) A: Yes.
21) Q: Using your definition of theory, you wouldn't argue that
22) Evolution is a theory; right?
23) A: That's correct.
24) Q: And just to be more precise, scientific theory?
25) A: That's correct, too.

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1) Q: Would you agree that it is the generally accepted theory
2) in the scientific community?
3) A: Rephrase. Back me up a little bit.
4) Q: Would you agree that Evolution is a generally accepted
5) theory in the scientific community?
6) A: Here I would have to ask what you mean by Evolution. Do
7) you mean to include particularly Darwin's mechanism of
8) random mutation and natural selection?
9) Q: That would be part of it.
10) A: What do you mean by generally accepted?
11) Q: Is it well accepted in the scientific community.
12) A: What do you mean by well accepted? Does over 50 percent
13) of scientists believe it or over 90 percent?
14) Q: What do you think the answer to that question is?
15) A: To tell you the truth, I am not quite sure. I have met
16) many, many scientists who are skeptical of Darwinian
17) Evolution. I have seen no rigorous surveys of the
18) scientific community asking in detail about whether
19) scientists think that random mutation and natural
20) selection, in particular, can explain the complex
21) molecular machinery of the cell.
22) In the absence of that information, I am not sure
23) how I would answer that question.
24) Q: The Darwinian Theory of Evolution is not just the Theory
25) of Evolution of the cell; correct?

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1) A: That's correct.
2) Q: So looking at the Theory of Evolution generally, would
3) you agree that it is well accepted in the scientific
4) community?
5) A: One more time. By evolution, do you mean Darwinian
6) Evolution?
7) Q: Yes.
8) A: Again, I am going to have to say I am not quite sure how
9) to interpret your phrase well accepted. It certainly is
10) — there are a number of papers which assume Darwinian
11) Evolution to be true which are published in the
12) literature.
13) But if you mean by well accepted do most
14) scientists think that Darwinian Evolution is a complete
15) explanation even above the level of a cell, I would have
16) to say I don't know. I have met a number of people who
17) are skeptical of that. So I would just say I don't
18) know.
19) Q: What about Intelligent Design, can you characterize how
20) well that is accepted in the scientific community?
21) A: Well, in the same vein, Intelligent Design does not have
22) many specific papers published in scientific journals.
23) And as I have indicated previously, there's an animus
24) against the idea of Intelligent Design in a number of
25) quarters in the scientific community.

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1) But I have also spoken with a number of scientists
2) who agree that something like Intelligent Design is a
3) reasonable explanation or potential explanation for much
4) of life.

5) So again in the absence of some sort of
6) authoritative survey of attitudes on this, I would have
7) to say I couldn't tell you what percentage of scientists
8) think Intelligent Design is likely to be true.

9) Q: You certainly couldn't make a claim that it is well
10) accepted?

11) A: Again, I am going to have to say I don't know. It is
12) going to have to depend on what you mean by well
13) accepted. There are — also, it has to depend on what
14) you mean by Intelligent Design.

15) And it depends on what — who you are including in
16) the body of scientists. Are you including just Ph.D.'s
17) at research institutions, or people with bachelor's
18) degrees in the relevant sciences, or medical doctors, or
19) engineers and so on?

20) So if the definition is expansive enough, I think
21) one might find that if you surveyed people, there would
22) be a significant fraction of scientifically trained
23) individuals who thought something like Intelligent
24) Design was in fact true.

25) (Behe Exhibit 5 was marked.)

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BY MR. ROTHSCHILD:

1) Q: Mike, I am showing you your rebuttal analysis of Kenneth
2) Miller's statement which we received I think on Tuesday
3) of this week.

4) If you could turn to page ten, the bottom of the
5) first full paragraph, you say: Thus even if the
6) majority of the scientific community disapproves of
7) Intelligent Design, there may be sound reasons for
8) discussing the topic in high school science classrooms.

9) When you used the phrase scientific community in
10) that passage, what did you mean?

11) A: That was a conditional statement. That means that when
12) I meant scientific community, I meant essentially all
13) scientists who were — essentially all scientists who
14) were work as scientists if they did disapprove. I
15) wasn't assuming that they did disapprove.

16) Q: Do you have a — using your definition of scientific
17) community, do you have any assessment of whether
18) Intelligent Design is accepted by a majority of
19) scientists?

20) A: Well, again, I do not have evidence I could show to you,
21) but it is my feeling I would take an expansive
22) definition of the scientific community. I would even
23) include people like biology teachers and people who have
24) studied science and think about it. I might even

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25) include philosophers of science in that.

26) In that broader category, it is my feeling anyway
27) that something like Intelligent Design has significant
28) support.

29) Q: What about in the field of evolutionary biologists, do
30) you believe that Intelligent Design has —

31) A: No, I don't.

32) Q: It is not well accepted?

33) A: If by evolutionary biologists you mean people at
34) universities, who teach at universities in the United
35) States or in the world and who did their doctoral work
36) on evolutionary biology, then no, I don't think it is
37) well accepted there.

38) Q: What about the discipline of biochemistry, using that
39) same kind of definition?

40) A: I think the — it is my feeling that the amount of
41) support would be significantly higher than in the
42) discipline of evolutionary biology, but I couldn't give
43) you numbers.

44) Q: Would you characterize it as well accepted in the
45) discipline of biochemistry?

46) A: It depends on what you mean by well accepted. If you
47) include working biochemists who teach or do research in
48) all colleges and universities in the United States or
49) elsewhere, I would say it is my feeling that there is a

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50) significant fraction, enough so that I would say — I
51) would say there is a significant fraction who think that
52) Intelligent Design might possibly be true.

53) Q: You are not suggesting a majority?

54) A: It depends again on what you mean. Because it's also
55) been my experience in discussing Intelligent Design with
56) many people, that many people have a distorted view of
57) what Intelligent Design is as I present it. They easily
58) confuse it with Creationism and other things that I do
59) not argue for.

60) I found in some conversations — which is, of
61) course, just anecdotal. I found in some conversations
62) when people find the more limited and directed nature of
63) my argument, they think it is more reasonable than
64) accounts of Intelligent Design that they read in
65) editorials and other places.

66) Q: Using your definition of theory, is Creationism — using
67) your definition of scientific theory, is Creationism a
68) scientific theory?

69) A: No.

70) Q: What about creation science?

71) A: No.

72) Q: Is astrology a theory under that definition?

73) A: Is astrology? It could be, yes.

74) Q: Are you familiar with the term hypothesis as it is used

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1) in science?
2) A: I am not sure an hypothesis has any singular meaning in
3) science. I have certainly heard the word hypothesis and
4) have a vague, general understanding of what it means,
5) yes.
6) Q: What is that vague, general understanding?
7) A: Vaguely, it's that — it is a proposed explanation for
8) how something might work. Often times, it is used as a
9) synonym for a theory.
10) Q: It is pretty close to a synonym for the one way you
11) define theory in your report on page eleven; isn't it?
12) A: Yes. I would use it as a synonym for the fifth part of
13) Darwin's Theory where he talks about natural selection.
14) I would say that was a hypothesis as well.
15) Q: Would you agree that the way you describe hypothesis is
16) a synonym for the way you describe scientific theory?
17) A: Yes.
18) Q: Going back to the National Academy of Sciences
19) definition, a well substantiated explanation of some
20) aspect of the natural world that can incorporate facts,
21) laws, inferences and tested hypothesis. Using that
22) definition, does Intelligent Design qualify as a
23) scientific theory?
24) A: Okay. Can you direct me to that page, again?
25) Q: Go back to page eight of your report.

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1) MR. WHITE: Which exhibit number is that,
2) Exhibit 1?
3) MR. ROTHSCHILD: Yes.
4) MR. WHITE: The other one.
5) A: I am sorry.
6) MR. WHITE: What page was that, Eric?
7) BY MR. ROTHSCHILD:
8) Q: Page eight at the top where Mike reports the definition
9) used by the National Academy of Sciences.
10) A: I am going to say that I would argue that in fact it is.
11) Q: Intelligent Design does meet that?
12) A: It's well substantiated yes.
13) Q: Let's be clear here. I am asking you looking at that
14) definition of a scientific theory in its entirety, is it
15) your position that Intelligent Design is a scientific
16) theory?
17) MR. WHITE: Objection. This is a definition of
18) theory; right?
19) MR. ROTHSCHILD: This says —
20) MR. WHITE: On page eight.
21) MR. ROTHSCHILD: It says the word theory is
22) sometimes used in science to indicate.
23) A: I think one can argue these a variety of ways. For
24) purposes of an answer to the — a relatively brief
25) answer to the question, I will say that I don't think it

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1) falls under this.
2) BY MR. ROTHSCHILD:
3) Q: What about this definition — what is it in this
4) definition that ID can't satisfy to be called a
5) scientific theory under these terms?
6) A: Well, implicit in this definition, it seems to me that
7) there would be an agreed upon way to decide that
8) something was well substantiated.
9) And although I do think that Intelligent Design is
10) well substantiated, I think there is not — I can't
11) point to external — an external community that would
12) agree that it was well substantiated.
13) Q: Is there anything else about this definition that ID
14) doesn't satisfy?
15) A: I don't think so.
16) Q: It does have tested hypotheses in your view?
17) A: I think it does.
18) Q: Can you describe a tested hypothesis that is part of
19) Intelligent Design?
20) A: Yes. One is that if you knock out components of an
21) irreducibly complex system, then the system would fail.
22) The system would cease to work.
23) Russell Doolittle, who is a Professor of
24) Biochemistry at the University of the California San
25) Diego, a member of the National Academy of Sciences, had

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1) argued in an essay in a magazine called Boston Review
2) that there was experimental evidence showing that one
3) could knock out — and by that term knock out, I mean
4) destroy and cease to function several components of the
5) blood clotting cascade, and nonetheless the cascade
6) would continue to work. And he saw that specifically as
7) an argument against my idea of irreducible complexity
8) and by inference Intelligent Design.
9) But when you knock out those components, in fact
10) the system did in fact fail to work. So the hypothesis
11) of irreducible complexity is if you remove one of those
12) parts, it would cease to work. And the experiment
13) showed that was in fact correct.
14) Q: Doesn't the example you give and the definition again
15) touch on the defect we discussed earlier, which is that
16) sort of working backwards?
17) Natural selection is a process that works from the
18) bottom up moving forward, and here you are talking about
19) removing a part.
20) A: It is not working backwards because one is simply
21) looking at the preexisting — the existing system,
22) taking a part out and asking yourself can it fulfill its
23) role or a closely similar role.
24) And the answer in this case, in this
25) experimentally examined case was no. So I think that

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(1) particular point does not apply here.
(2) Q: Using this National Academy of Sciences' definition of
(3) scientific theory, does germ theory qualify?
(4) A: I believe it does, yes.
(5) Q: Anatomic theory?
(6) A: I will bet you that does, too.
(7) Q: Theory of Evolution?
(8) A: Unfortunately, the Theory of Evolution is a compound
(9) theory with many different claims in it, several of
(10) which do fit this definition, but several of which do
(11) not.
(12) So one has to be very careful that one doesn't
(13) accept a less well substantiated aspect of Evolutionary
(14) Theory on the strength of some utterly unrelated aspect
(15) of Evolutionary Theory.
(16) As I said in my expert report, I think that the
(17) claim of Evolutionary Theory that there has been change
(18) over time on earth and other such claims are in fact
(19) well substantiated. But what I view to be the critical
(20) claim relevant to Intelligent Design of Darwin's
(21) particular Theory of Evolution is that random mutation
(22) — the unintelligent process of random mutation and
(23) natural selection can explain the complexity of life,
(24) especially the molecular complexity of life, I think
(25) that does not fit that definition.

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(1) Q: Does the assertion that random mutation and natural
(2) selection occur at the organism level, does that part of
(3) the theory pass the theory test set up by the National
(4) Academy of Science?
(5) A: Again, we have to be careful. It is certainly true that
(6) random mutation occurs, and that it can have effects at
(7) the organismal level. But the sorts of things that we
(8) see it doing in our present world are very small changes
(9) in preexisting system.
(10) It is a huge extrapolation to then say the same
(11) process, even at the organismal level, where I am not an
(12) expert, it is an extrapolation to say that same process
(13) is responsible for building more complex systems from
(14) the ground up.
(15) Q: Are you familiar with Paul Nelson?
(16) A: Yes, I know Paul.
(17) Q: And tell me what you — is Paul Nelson involved in the
(18) Intelligent Design movement?
(19) A: Well, he is a fellow of the Discovery Institute I am
(20) pretty sure. He is very interested in Intelligent
(21) Design. And so I guess that qualifies him, yes.
(22) Q: You are also a fellow at the Discovery Institute;
(23) correct?
(24) A: Yes.
(25) Q: You have been such for a number of years; correct?

(1) A: I am sorry?
(2) Q: You have been that for a number of years; correct?
(3) A: Yes. I think since the mid 1990's sometime.
(4) Q: What is entailed in being a fellow at the Discovery
(5) Institute?
(6) A: Mostly, you agree to have your name put on their
(7) letterhead. And every now and again — essentially, it
(8) is just — from my point of view, it is a mechanism to
(9) keep together or group together and allow people to meet
(10) who are interested in the question of Evolution and
(11) Intelligent Design.
(12) Q: Do they sponsor any of your research or your work?
(13) A: In the past, there were three years that they gave me a
(14) grant of roughly \$10,000.00 per year. They didn't give
(15) it to me. I should correct myself. They gave it to
(16) Lehigh University to release me from some teaching
(17) obligations so that I might spend more time thinking and
(18) writing about Intelligent Design.
(19) Q: Do you have any policy making function as it relates to
(20) the Discovery Institute?
(21) A: No.
(22) Q: I want to show you an article published in the
(23) July/August 2004 edition of Touchstone, a Journal of
(24) Mere Christianity. The cover of the magazine says
(25) Darwin's Last Stand, a Special Issue on Darwinism,

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(1) Naturalism and Intelligent Design.
(2) And the particular article I am going to give you
(3) is sort of a composite interview with a number of
(4) individuals.
(5) MR. ROTHSCHILD: Why don't we go ahead and mark
(6) that?
(7) (Behe Exhibit 6 was marked.)
(8) BY MR. ROTHSCHILD:
(9) Q: Have you ever seen this article before?
(10) A: No, I haven't.
(11) Q: If you could turn to page 64 of the article.
(12) A: (Witness complies.) Okay.
(13) Q: If you look at the bottom, there is a quote attributed
(14) to — well, first of all, there is a question where is
(15) the ID movement going in the next ten years, what new
(16) issues will it be exploring and what new challenges will
(17) it be offering Darwinism?
(18) And the answer attributed to Nelson is: Easily
(19) the biggest challenge facing the ID community is develop
(20) a full fledged theory of biological design. We don't
(21) have such a theory right now, and that's a real problem.
(22) Without a theory, it is very hard to know where to
(23) direct your research focus. Right now, we have got a
(24) bag of powerful intuitions and a handful of notions such
(25) as "irreducible complexity" and "specified complexity",

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1) but as yet no general theory of biological design.
2) Do agree with that statement?
3) A: The whole thing, no, I don't.
4) Q: What don't you agree with?
5) A: I don't think that the biggest challenge facing the ID
6) community is to develop a full fledged theory of
7) biological design. I don't think such a thing is
8) necessary.
9) I think if you look at the history of science, it
10) was not required of other ideas in the past. And I
11) don't see any reason why Intelligent Design now has to
12) produce some full fledged accounting of itself before it
13) can proceed.
14) Q: But you do agree it doesn't have that yet?
15) A: It depends on what you mean by having a full fledged
16) theory of design. If I looked at Mt. Rushmore, the
17) conclusion of design would be full fledged right away.
18) And that is what I focus on.
19) There are many, many questions that grow out of
20) that which would be very interesting to develop and
21) which could be developed in the future. But I do not
22) think answers to any of them are really necessary for
23) the conclusion of design.
24) Q: I want to get away from Mt. Rushmore. I know it is a
25) clever analogy.

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1) A: I like it.
2) Q: I want to talk about biological design and ask you
3) whether Intelligent Design has a full fledged theory of
4) biological design?
5) A: I don't know what you mean by full fledged.
6) Q: I didn't give this answer. I know you didn't either.
7) But --
8) A: I disagree with Paul Nelson. I think that the
9) conclusion of design in biology -- leaving Mt. Rushmore
10) out of it -- can be deduced. We can come to that
11) conclusion based on what we already know about molecular
12) systems.
13) I think the design is evident in the structures.
14) The only reason that there is controversy over this is
15) that other people think there is a non design
16) explanation. But if you look in the literature, if you
17) even look in the expert reports for the other side,
18) people say that complex molecular machines have not
19) received Darwinian explanations -- detailed Darwinian
20) explanations, experimentally verified explanations as of
21) yet.
22) In my view then, the situation is that we have an
23) obvious answer staring us in the face which many people
24) fail to recognize because they think that an alternative
25) which has not proved itself might be the answer instead.

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1) Q: Could you turn to page 239 of Darwin's Black Box?
2) A: (Witness complies.) Yes.
3) Q: And actually we will look at 238 as well. You discuss a
4) rule described by Richard Dickerson?
5) A: Yes.
6) Q: And on page 239, you rephrase Dickerson's rule to state
7) science must invoke only natural causes and explain by
8) reference only the natural law, right?
9) A: Okay. Yes.
10) Q: And if you look at page 238 and what Dickerson actually
11) said, he included in that definition that you are
12) rephrasing that science shouldn't invoke the
13) supernatural, correct?
14) A: Right.
15) Q: And the rule that's being described here, is a term for
16) that methodological naturalism?
17) A: I think some people do use the term methodological
18) naturalism in roughly the same sense, yes.
19) Q: Do you have any problem with using the term that way?
20) A: Only if we keep in mind that there are -- there's some
21) fuzziness about his definition.
22) Q: Is the rule of methodological naturalism one that is
23) prevailing in science today?
24) A: No, not necessarily. For example, in the earlier part
25) of the 20th Century, the Big Bang Theory was proposed.

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1) That seemed to point to an explanation beyond nature or
2) a cause beyond nature at least it struck many scientists
3) at the time. Yet scientists -- a number of scientists
4) nonetheless thought it seemed to be consistent with the
5) data.
6) I would think that that was -- actually people
7) kind of disregarded methodological naturalism in that
8) point -- at that point. There have been other points in
9) the history of science where they have also disregarded
10) that.
11) Q: Do you agree that Intelligent Design -- for Intelligent
12) Design to be accepted as science, it requires the
13) rejection of methodological naturalism as a constraint
14) on science?
15) A: No, I don't.
16) Q: So if somebody was to say that so long as methodological
17) naturalism sets the ground rules for how science is to
18) be played, Intelligent Design theory has no chance?
19) A: Well, again, here is this fuzziness of the phrase
20) methodological naturalism. I think as in when one is
21) discussing Intelligent Design simply because of the
22) history of interaction between the science and biology
23) in particular and religion, that people when they hear
24) something like Intelligent Design immediately think one
25) is proposing something like the Book of Genesis or

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(1) whatever as an explanation.

(2) I don't think they are -- so immediately they
(3) think of it as a religious explanation even though I try
(4) to stress in my own writings that I view it as an
(5) empirical explanation.

(6) So I think if one took a strict philosophical
(7) definition of methodological naturalism and one was
(8) aware of the false notions that have been ascribed to
(9) it, then one could say that ID could proceed even if
(10) that were the case -- even if methodological naturalism
(11) were accepted.

(12) But I think that as a practical and historical
(13) matter, that most people are not so rigorous in their
(14) thinking. And therefore, it does -- people's notions of
(15) methodological naturalism are more broad than the
(16) definition that Richard Dickerson gave. And therefore,
(17) it does -- that notion presents a significant block to
(18) developing Intelligent Design.

(19) Q: I am going to read to you from Mr. Dembski's rebuttal
(20) report. He says given methodological materials -- which
(21) he uses interchangeably with methodological naturalism
(22) -- as a regulated principle for science, ID is by
(23) definition excluded from science. ID proponents regard
(24) methodological materialism as an arbitrary rule imposed
(25) on science, and therefore propose to get rid of it. In

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(1) doing so, they are changing the ground rules of science.

(2) Do you agree with those statements?

(3) A: I am going to have to hear that --

(4) MR. WHITE: Would you please show that to him?

(5) MR. ROTHSCHILD: What don't we mark that as the
(6) next exhibit? It is at the bottom of page 20.

(7) (Behe Exhibit 7 was marked.)

(8) BY MR. ROTHSCHILD:

(9) Q: Bottom of page 20, where it says comment.

(10) A: Okay. There are some things that I would agree with and
(11) some I would not agree with.

(12) Q: Go ahead.

(13) A: Okay. I would say that it is wrong to say that ID would
(14) be by definition excluded from science if you are taking
(15) that to mean some sort of philosophical or logical
(16) definition. Simply because as I said, Intelligent
(17) Design does not even require a nonnatural designer.

(18) Even if one judges that to be unlikely, that
(19) unlikelihood or not does not affect the words by
(20) definition. By definition, it would have to be utterly
(21) illogical to propose it. So I disagree with that
(22) statement.

(23) I do agree with the next statement that
(24) Intelligent Design proponents regard methodological
(25) materialism as an arbitrary rule imposed on science, and

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(1) therefore -- I don't know about proposed getting rid of
(2) it. All of this is difficult because this rule is
(3) written down nowhere in particular. It is just kind of
(4) a background assumption.

(5) So there is nobody one could appeal to to say can
(6) you change this rule, please. I do think it is an
(7) arbitrary assumption, particularly when one is talking
(8) about things such as the origin of the universe and the
(9) origin of life and other things like that. I think it
(10) does in fact beg the question of whether material
(11) processes can in fact account for such basic events.

(12) So in a sense, I agree with Dembski that I regard
(13) it in some ways as arbitrary, but I don't think it by
(14) definition excludes ID.

(15) Q: Though to a large extent, it does; is that fair?

(16) A: As a practical matter as opposed to a dictionary
(17) definition type of matter, it does, yes.

(18) Q: And ID proponents are seeking to change the ground rules
(19) of science so that Intelligent Design can be considered
(20) in full?

(21) A: Well, you have to be careful of using phrases like the
(22) ground rules of science because there are no ground
(23) rules of science. There are common -- often times
(24) common assumptions. Common assumptions can change from
(25) time to time.

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(1) There are many examples in the history of science
(2) where such a thing has happened. Such as when the Big
(3) Bang Theory was proposed, people thought it was given
(4) that the universe was eternal.

(5) So we in the Intelligent Design community want to
(6) persuade a larger fraction of the scientific community
(7) at large that in fact methodological naturalism is not a
(8) useful guiding principle in this area.

(9) Q: Just so we are clear here the phrase ground rules is not
(10) my own. It is not yours. It is Mr. Dembski's. He says
(11) they are changing the ground rules of science. I
(12) interpret that as the current ground rules.

(13) Would you agree that the current ground rules, how
(14) most scientists operate and consider the boundaries of
(15) science include the principle of methodological
(16) naturalism?

(17) A: I am afraid I will not agree with that simply because I
(18) think the great majority of scientists have not given
(19) these issues much thought.

(20) Q: Just to read you another statement by Mr. Dembski.

(21) MR. WHITE: Eric, what page?

(22) MR. ROTHSCHILD: This is in a different
(23) publication.

(24) MR. WHITE: Would you like to show it to him?

(25) MR. ROTHSCHILD: Yes, just give me a second.

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(1) (Behe Exhibit 8 was marked.)

(2) MR. WHITE: While we look at the copy, can we take
(3) a break? We have been going about an hour.

(4) MR. ROTHSCHILD: That's fine.

(5) (A recess was taken.)

(6) AFTER RECESS

(7) BY MR. ROTHSCHILD:

(8) Q: In this article by Mr. Dembski called "What Every
(9) Theologian Should Know about Creation, Evolution and
(10) Design", which is marked as 8, there is a section on
(11) science that starts on page 82.

(12) A: Yes.

(13) Q: And it states that science according to the Darwin's
(14) establishment by definition excludes everything except
(15) the material and the natural.

(16) MR. WHITE: Where is that?

(17) A: Where is that?

(18) BY MR. ROTHSCHILD:

(19) Q: Right under — in the second paragraph under science.

(20) A: Okay. I have got it.

(21) Q: And it goes on to say the cornerstone of the scientific
(22) method is the postulate that nature is objective and the
(23) a systematic denial of purpose, do you see that? I am
(24) shortening that a little bit.

(25) A: Yes.

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(1) Q: And then it says — by going on to the next page, first
(2) full paragraph, it says by defining science as that form
(3) of inquiry restricted solely to what can be explained
(4) the terms of naturalistic purposeless material
(5) processes, the Darwinian establishment has ruled IDT out
(6) of science from the start.

(7) A: I didn't see where you were reading that from.

(8) Q: The full paragraph on BP 83.

(9) A: Okay.

(10) Q: And if you go down near the bottom of the page,
(11) Mr. Dembski describes this naturalistic material process
(12) as methodological naturalism, second to the last
(13) paragraph?

(14) A: Okay.

(15) Q: Do you agree — do you understand Mr. Dembski to be
(16) saying here that this is how science currently defines
(17) itself with this constraint of methodological
(18) naturalism?

(19) A: I don't think he said that science defines itself that
(20) way. I think he said the Darwinian establishment. By
(21) that, I bet you he means many of the leading proponents
(22) of Darwinian theory think that in fact, the universe has
(23) to be explained as a self-contained system.

(24) Q: If you go further down the page, the last paragraph on
(25) the page, he refers to the scientific community; doesn't

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(1) he?

(2) A: I'm kind of nearsighted.

(3) Q: He says okay, since BWT is so poorly supported
(4) empirically and since the scientific community is
(5) telling us that IDT isn't science, he is referring to
(6) the whole scientific community; isn't he?

(7) MR. WHITE: Objection. Calls for speculation.

(8) A: What do I do?

(9) BY MR. ROTHSCHILD:

(10) Q: Let's move on, Mike. In the second to the last
(11) paragraph, he states so long as methodological
(12) naturalism sets the ground rules for how the game of
(13) science is to be played. IDT, meaning Intelligent
(14) Design Theory, has no chance Hades. I think most of us
(15) use a different expression.

(16) A: Bill is a smart guy.

(17) Q: Do you agree with Mr. Dembski?

(18) A: Again, it depends on what you mean by methodological
(19) naturalism. If you think that the designer had to have
(20) been by definition an entity contained within the
(21) universe, that is logically possible, but that hobbles
(22) Intelligent Design because it restricts the possibility
(23) of designers.

(24) And so to that extent, to the extent that it
(25) artificially restricts the possibilities open to

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(1) Intelligent Design, it would restrict the number of
(2) people who think it is a good theory.

(3) Q: So again from any practical standpoint, methodological
(4) naturalism is a severe constraint on Intelligent Design?

(5) A: From a practical standpoint, it is.

(6) Q: You have sort of thrown out these conceptual
(7) possibilities of natural designers. I think we agree.
(8) You don't take those particularly seriously; do you?

(9) A: As I stated in my book, I don't find them persuasive.
(10) On other grounds, I think that there are beings beyond
(11) nature. I am a Roman Catholic as I have written in the
(12) book. I am rather a conventional religious believe.
(13) So I find it consonant — or what is the word? I
(14) find it parsimonious to think that the designer that is
(15) indicated by what we have discovered in science is the
(16) same as the designer that — the being that I understand
(17) from my religious beliefs.

(18) Q: And even putting aside your belief in God, you have
(19) written that by Intelligent Design, you mean to imply
(20) design beyond the simple laws of nature?

(21) A: I wrote that. But by that, I meant — I actually meant
(22) design which is probably easier for a non supernatural
(23) being to perform. If one is talking about the design of
(24) laws of nature, then that would be a harder — even a
(25) space alien would have a tough time with that. So

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(1) design beyond the laws of nature is the kind of design
(2) we see in artificial systems like machinery in our human
(3) world. That is what I meant about the design that I
(4) think that I see in biochemistry.
(5) Q: And then in the same document, which again is this Reply
(6) to Critics article, you say that the hypothesis of
(7) Intelligent Design may reasonably be taken to imply the
(8) involvement of a supernatural agency, a miracle?
(9) MR. WHITE: Excuse me. Are we back on Exhibit 8
(10) to his expert report?
(11) MR. ROTHSCCHILD: Yes.
(12) MR. WHITE: What page are you talking about?
(13) MR. ROTHSCCHILD: Page 702.
(14) MR. WHITE: Which paragraph, Eric?
(15) MR. ROTHSCCHILD: It is in the final paragraph.
(16) MR. WHITE: Can you ask him again?
(17) BY MR. ROTHSCCHILD:
(18) Q: That is something you have written, right, that the
(19) hypothesis of Intelligent Design may reasonably be taken
(20) to imply the involvement of a supernatural agency, a
(21) miracle?
(22) A: Yes. Just like the Big Bang and so on have been taken
(23) by someone that way.
(24) Q: The Big Bang also involves a number of hypotheses that
(25) have actually been tested; is that fair?

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(1) A: I suppose so. I am not a physicist.
(2) Q: And the experimental tests of the Big Bang concept has
(3) been published to a great extent in peer reviewed
(4) literature; correct?
(5) A: I assume so.
(6) Q: One of the things you — one of the positions you have
(7) taken is that it's okay to consider the supernatural as
(8) part of the Intelligent Design concept, but you're not
(9) worried that that is going to infect every area of
(10) science. I think in your book you used the example of
(11) the regulation of enzymes?
(12) A: Yes.
(13) Q: What is the basis for that confidence?
(14) A: The basis is that we know of natural principles that can
(15) account for the regulation of enzymes. Looked at in one
(16) way simply Newtonian mechanics, how hard bodies hit each
(17) other, how electrostatics work. Chemistry, we have good
(18) explanations for how such things work.
(19) On the other hand, we do not have good
(20) explanations for how unintelligent processes could
(21) produce molecular machinery. So that is why I said
(22) that.
(23) Q: You are familiar with the phrase God of the gaps?
(24) A: Yes.
(25) Q: It is basically the proposition that God is the

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(1) explanation for things we haven't yet figured out yet?
(2) A: Yes.
(3) Q: Some of the things that you now say we have good natural
(4) explanations for, we didn't a hundred years ago;
(5) correct?
(6) A: Yes. We weren't even aware of some of the phenomena a
(7) hundred years ago like enzymes.
(8) Q: I am not speaking just about the molecular area where
(9) you studied, but lots of phenomena?
(10) A: Yes, but I don't think most of them were ascribed to
(11) God. I don't think enzymes weren't ascribed to God a
(12) hundred years ago because people barely knew there were
(13) such things as enzymes.
(14) Q: When enzymes were first discovered, but the regulation
(15) of them was not understood, one explanation could have
(16) been God takes care of that; fair?
(17) A: Well, if you are asking if I think that would be a good
(18) explanation, certainly there might be somebody who would
(19) propose any explanation one can think of. But I would
(20) not think that even then, that would be considered to be
(21) a good explanation.
(22) I am no historian of science, but I think such
(23) explanations were not accepted — have not been accepted
(24) for hundreds of years before the 19th Century.
(25) Q: What distinguishes Evolution at the molecular level from

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(1) these various other aspects of nature that an
(2) intelligent designer is a good explanation?
(3) A: The feature that distinguishes it is that we learn —
(4) have learned what the molecular systems look like. We
(5) are not basing our proposal on an ignorance of how
(6) things were work or an ignorance of what is there. We
(7) are proposing it on the basis of what we have discovered
(8) in the cell.
(9) Fifty years ago, a hundred years ago, nobody in
(10) the world knew that there were such things as molecular
(11) machines. And as a matter of fact, scientists such as
(12) Ernst Haeckel and a man named Thomas Huxley, both of
(13) whom were friends of Darwin, thought that cells could
(14) arise from sea mud by spontaneous generation. They
(15) suggested that because they had no idea of the
(16) complexity of the cell.
(17) So we had scientists proposing what we in
(18) retrospect see are absurd explanations, not because of
(19) what they knew, but because of what they were ignorant
(20) of.
(21) But now in the past hundred years, science has
(22) opened Darwin's Black Box, to coin a phrase, and we have
(23) discovered what's in there. And by this process of
(24) induction that I talk about, that these have structures
(25) which we see in other cases that require design, and

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1) because of the problem of irreducible complexity that we
2) talked about, it seems to be a big obstacle for
3) Darwinian explanation, I propose that we have strong
4) evidence for — strong positive evidence for design.
5) This is not a negative argument from ignorance.
6) It is an argument from knowledge.
7) Q: Let's return to your report. It might seem a funny
8) question to get at this juncture of the deposition, but
9) what is Intelligent Design?
10) Let me just sort of maybe shorten this a little
11) bit. Is it what is described on the top of page eleven
12) of your report?
13) MR. WHITE: You are talking Exhibit 1?
14) MR. ROTHSCILD: Yes.
15) A: Yes. Intelligent Design Theory, let me read the
16) sentence. Intelligent Design Theory proposes that the
17) origin of some aspects of living organisms is best
18) explained as the result of deliberate intelligent design
19) rather than as the result of such unintelligent
20) processes as the self-organization proposed by
21) complexity theory or the natural selection proposed by
22) Darwinian Theory. That is a reasonable definition.
23) BY MR. ROTHSCILD:
24) Q: I violate this rule consistently, but when you are
25) reading, try and slow down a bit. That was very fast.

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1) A: I am sorry.
2) Q: Is that definition one that you believe is agreed upon
3) in the Intelligent Design community?
4) A: For the most part, yes.
5) Q: And then you go on to say in that passage Intelligent
6) Design Theory focuses exclusively on the proposed
7) mechanism of how complex biological structures arose.
8) Is that assertion about Intelligent Design Theory
9) one that you understand to be agreed upon in the
10) Intelligent Design community?
11) A: For the most part, yes.
12) Q: In making that statement, I know you are working from a
13) list of claims associated with Darwin's Theory listed by
14) Ernst Mayr that are set forth on page nine and ten of
15) your report; is that correct?
16) A: Yes.
17) Q: And one of the things that you're saying by inference
18) here is that Intelligent Design Theory does not focus on
19) the Darwinian claim of common descent; is that correct?
20) A: That's correct.
21) Q: Is it your understanding that that limitation would be
22) agreed by the Intelligent Design community?
23) A: For the most part, yes.
24) Q: Some would extend Intelligent Design to address the
25) issue of common descent?

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1) A: I think some would be — some would question common
2) descent. But I think they would acknowledge that is not
3) part of Intelligent Design Theory proper.
4) Q: And then you also exclude from Intelligent Design
5) purview the question of gradualism; correct?
6) A: That's correct.
7) Q: And, again, would that be the consensus in the
8) Intelligent Design community?
9) A: For the most part, yes.
10) Q: Some would?
11) A: It is hard to get everybody to agree on lunch, let alone
12) that, yes. So some would always have some quibble.
13) Q: That is not part of the price of admission; is that
14) true?
15) A: What is that?
16) Q: I will withdraw that. I want to go back to some of the
17) issues. But for a moment, let's fast forward to page
18) 17.
19) At the top of the page, it is stated the only
20) assertion that Intelligent Design Theory itself properly
21) makes is that some aspects of biology are indeed the
22) product of Intelligent Design.
23) Why is that the only assertion that Intelligent
24) Design Theory properly makes?
25) A: Because Intelligent Design is concerned with the

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1) question of whether some aspect of nature could have
2) arisen by unintelligent processes or required
3) intelligent activity to produce it. Therefore, when you
4) go beyond that simple deduction, you are essentially —
5) you are essentially going to rely on other — you are
6) trying to make other deductions, trying to rely on other
7) evidence other than the simple apprehension of design.
8) So that's why.
9) Q: Let's go back to some of the issues that you excluded
10) from Intelligent Design's purview. Let's start with
11) common descent.
12) Am I correct in understanding that that is the
13) proposition that all organisms share a common ancestor?
14) A: Roughly. There has been some kind of discussion about
15) this in the biological literature about whether one can
16) really trace back all lineages to a single, common
17) ancestor including the different classes of single
18) celled organisms, but that's roughly the case for larger
19) organisms such as plants and animals and so on.
20) Q: From where Mike Behe comes out on this, you find the
21) proposition that all organisms share a common ancestor
22) fairly convincing?
23) A: Yes.
24) Q: I would like a little clarification. When you say
25) Intelligent Design Theory does not concern any other

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(1) claims such as common descent, are you saying that
(2) Intelligent Design Theory accepts that proposition of
(3) the Darwinian Theory or just has no opinion, whatsoever?
(4) A: Intelligent Design is not a thinking entity. It's this
(5) theory. And the theory is focused solely on the
(6) question of whether or not there is design.
(7) So no more than plate tectonics has to do with the
(8) orbit of Mercury or something like that. It simply does
(9) not come under the aegis of Intelligent Design, those
(10) questions.

(11) Q: I think you have described Evolution as a theory, sort
(12) of a historical theory?

(13) A: I don't think I used that word.

(14) Q: A theory of the history of life?

(15) A: I don't think I used that either. That doesn't sound
(16) like me.

(17) Q: Let's see if I can get this right. So going back to the
(18) common descent point, am I correct in understanding then
(19) that Intelligent Design Theory simply does not take a
(20) position on common descent one way or the other?

(21) A: That's correct.

(22) Q: Now you say that the idea of common descent is fairly
(23) convincing?

(24) A: Yes.

(25) Q: Is that based on the scientific evidence?

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(1) A: From my reading of the scientific evidence, yes.

(2) Q: And if a proponent making the case for Intelligent
(3) Design included in his or her argument that common
(4) descent was in doubt, would you characterize that as an
(5) improper claim on behalf of Intelligent Design?

(6) A: I would think that that was a claim outside of the
(7) purview of Intelligent Design Theory.

(8) Q: If students, say Dover students were taught that the
(9) proposition of common descent was in doubt, would you
(10) consider that an unsound education for those students?

(11) A: From my understanding, nobody has proposed to teach them
(12) that. So I am not sure I would. I am not sure why we
(13) have to go there.

(14) Q: Let's go there because I am saying if students —

(15) A: If any students were taught that — could you say that
(16) again?

(17) Q: If students were taught that the proposition of common
(18) descent was in doubt and not supported by scientific
(19) evidence, was in doubt, would you given what you know
(20) about the scientific evidence, would you think the
(21) students are being improperly taught?

(22) A: Again, I think you have to kind of slow down and think
(23) about it. I myself find the evidence persuasive. The
(24) question is can there be evidence against common descent
(25) at all? And if there is, do most scientists accept it

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(1) or not? And if some people don't, what are their
(2) reasons for doing so?

(3) Common descent is a broad concept. As I was
(4) alluding to earlier, there are some scientists who even
(5) wonder if — who wonder — who have no sympathy for
(6) Intelligent Design but who wonder if the branches of
(7) single celled organisms all arose from a single actually
(8) existing cell.

(9) So you would have to be careful about how you
(10) define common descent. You would have to be careful to
(11) say whether you thought the evidence weighed heavily in
(12) favor of common descent. But is there no evidence
(13) whatsoever on the other hand, on the other side?

(14) So I would say that I don't think if students were
(15) taught that they — that the scientific community as a
(16) whole — to the extent that I know what the scientific
(17) community as a whole thinks — if they thought
(18) Intelligent Design was in doubt, that would be
(19) incorrect.

(20) But if you were asking could students be shown
(21) evidence that made the claim of Intelligent Design less
(22) clear or did not assume — not Intelligent Design — I
(23) meant common descent — made the claim of common descent
(24) unclear or looked at it from a different point of view,
(25) I think students — I think it is quite proper

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(1) academically for students to entertain a wide range of
(2) ideas, even those that we think might be false, simply
(3) to give them the experience of looking at a subject from
(4) a variety of different viewpoints.

(5) Q: If you were asked to be an expert witness in support of
(6) a change to curriculum that communicated to students
(7) that the Theory of Common Descent is held in doubt by
(8) some scientists, could you personally based on your
(9) expertise support that position?

(10) A: Again, let me just make the distinction. It is clear
(11) that some scientists do doubt common descent defined as
(12) the fact — defined as a single cell.

(13) Q: Let me interrupt you. Let's say common descent
(14) generally.

(15) A: In general, mammals being derived from earlier
(16) vertebrates and things like that. It is not the case
(17) that much of a fraction of the scientific community
(18) doubts that. So as a simple statement of what the
(19) scientific community thinks, that would be incorrect.

(20) Q: You would have no basis to think there is scientific
(21) merit to the other view?

(22) A: What other view is that; that common descent is
(23) incorrect?

(24) Q: Right.

(25) A: I don't know — again, it depends on how you define

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(1) common descent. I think there is strong evidence for
(2) it.
(3) The people I have heard who make cases against
(4) common descent often times point to the fact that we do
(5) not know of any mechanism that could transform one sort
(6) of an organism into another sort of an organism by
(7) random processes and natural selection. And I know of
(8) no such mechanism either. And there is no such
(9) mechanism published in the scientific literature.
(10) So I could not address their objections.
(11) Nonetheless, I think that the evidence in favor — if
(12) you think similarities between organisms are evidence in
(13) favor of common descent, I think that is — I agree then
(14) that there is good evidence.
(15) So all in all, I think common descent is a fine
(16) idea. It is a good one to work under. But no idea
(17) should be accepted utterly as a postulate. No idea
(18) should be accepted and evidence — even that some people
(19) think is evidence against it, that evidence should not
(20) be kept — should not be ruled inadmissible in some
(21) discussion or other.
(22) Q: When you talk about the good evidence for common
(23) descent, does that include the evidence from gene
(24) sequencing?
(25) A: Yes.

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(1) Q: Does it include the fossil record?
(2) A: Yeah, to a degree.
(3) Q: You said something a little bit earlier that even if a
(4) scientific concept is wrong, that's all right to teach
(5) it. I am paraphrasing.
(6) A: Well, I said if most people think it is wrong. Of
(7) course the definition of science, you don't know
(8) anything absolutely for sure. So even if most people
(9) think it's wrong, yes, it can be a good pedagogical
(10) exercise to teach students about a concept just to give
(11) them a different point of view.
(12) Q: When you do that, teach something that is widely
(13) recognized as being wrong, what is the right pedagogical
(14) approach? Do you present it as if it is not wrong, not
(15) called into question?
(16) A: Not at all, no. You can stand up and say this is what
(17) the great majority of scientists believe. This is the
(18) evidence they point to. However, there is this band of
(19) crazies over here who doubt this. This is what they
(20) say.
(21) Here's two articles in Scientific American or some
(22) popular journal acceptable to students arguing the case
(23) for one and the case for the other. Go through these.
(24) What do you think of these arguments and so on? Why are
(25) these guys the nuts? Why are the assumptions here?

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(1) What is the evidence here?
(2) There is no need — when you use the word teach, I
(3) do not mean you should not say student should be taught
(4) a theory. That does not mean presented as true. It
(5) means presented and say here are some ideas. Examine
(6) these ideas. Examine the evidence, and see how people
(7) make up their minds. Sometimes different people come to
(8) different judgments.
(9) So I think something like that is a great
(10) pedagogical exercise.
(11) Q: You also said that Intelligent Design Theory does not
(12) concern the age of the earth?
(13) A: That's correct.
(14) Q: And again, are you saying Intelligent Design Theory —
(15) let me rephrase that. Would you agree that the
(16) generally accepted scientific position on the age of the
(17) earth is it is very old, billions of years old?
(18) A: Yes.
(19) Q: And that it is not widely held in the scientific
(20) community that the earth is six to ten thousand years
(21) old?
(22) A: Right.
(23) Q: And are you persuaded by the scientific evidence for the
(24) older earth?
(25) A: Yes.

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(1) Q: When you say Intelligent Design Theory does not concern
(2) the age of the earth, does Intelligent Design Theory
(3) accept the widely accepted old earth proposition, or
(4) does it just simply have no position at all?
(5) A: Again, that is not its subject matter. Let me give you
(6) an example. I am afraid I am going to go back to Mt.
(7) Rushmore again.
(8) If you drove by — if you had never heard of Mt.
(9) Rushmore and you drove by it and looked up at the faces
(10) on the mountain, you would immediately perceive that
(11) they were the result of intelligent activity. You would
(12) not perceive how old they were. They could be millions
(13) of years old for all the person looking at them for the
(14) first time. They could have been carved last week.
(15) You need more evidence other than the way that the
(16) parts of the system interact to form a functioning
(17) whole. You need more evidence than that to answer
(18) additional questions such as how old is this system.
(19) Q: Would you agree that Intelligent Design Theory speaks to
(20) the development of life over time?
(21) A: Can you spell out what you mean by the development of
(22) life over time?
(23) Q: It is a concept that deals with how living organisms or
(24) attributes came to be over time.
(25) A: Well, Intelligent Design really doesn't have a lot to

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(1) say about time for the reason that I alluded to in the
(2) last answer. Intelligent Design in biology sees things
(3) and can conclude that they are the result of intelligent
(4) activity. If for other reasons we decide that these
(5) arose at some point in the past, then we are talking
(6) about a biological system that was not there at some
(7) point and then developed somehow.

(8) And Intelligent Design Theory would argue that
(9) intelligence was a part of that development process.
(10) But other than that, I am not quite sure what I could
(11) say.

(12) Q: Okay. So Intelligent Design then allows individuals to
(13) hold the view that the earth is 10,000 years old while
(14) also accepting the other tenets of Intelligent Design?

(15) A: Intelligent Design says nothing about the age of the
(16) earth. So people could think it was infinitely old or
(17) ten years old for all Intelligent Design says. But yes,
(18) they could also think that it was 10,000 years old.

(19) Q: I am surprised you say it could be infinitely old
(20) because part of what I understand you to be saying with
(21) the creation of systems at the molecular level is part
(22) of it is a function of time. That if we had infinite
(23) time, we might get there.

(24) A: Maybe infinite was not a good word to use. Thank you
(25) for pointing that out. Even if it was much older than

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(1) we currently think it to be I will say.

(2) Q: And then one of the other claims of Darwin's Theory is
(3) the claim of gradualism rather than through sudden
(4) production of new individuals that represent a new type?

(5) A: Yes.

(6) Q: And I assume you are going to say the same thing —
(7) well, I won't assume. Do you accept the proposition of
(8) gradualism?

(9) A: Yes.

(10) Q: Is it the case for Intelligent Design Theory that it
(11) doesn't take a position one way or the other?

(12) A: Yes.

(13) Q: I am going to use the word abrupt appearance here, but I
(14) don't mean simply the evidence — the fossil record. I
(15) mean actually the new form appearing.

(16) A: Okay.

(17) Q: Let me ask you when you talk about sudden production of
(18) new individuals that represent a new type, that is what
(19) you are really talking about, right?

(20) A: Those aren't my words. Those are Ernst Mayr words.

(21) Q: What do you understand him to mean with those words?

(22) A: Ernst Mayr, he is dead now. I guess he had in mind
(23) something like a Creationistic view of the production of
(24) life.

(25) Q: Which is sort of life out of nothing?

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(1) A: Yes, ex nihilo.

(2) Q: Fish appear where there were no fish before and not from
(3) a precursor?

(4) A: If you are talking about in real time, it's a puff of
(5) smoke and there's a fish, I think that is probably what
(6) he had in mind, yes.

(7) Q: So if students were taught that Intelligent Design holds
(8) that forms of life appeared in that form, you know, dogs
(9) with tails and birds with wings, that would be an
(10) incorrect representation of Intelligent Design?

(11) A: You have to be a little bit nuanced here. It would not
(12) be a necessary consequence of the idea of Intelligent
(13) Design. But I think somebody making an argument like
(14) that would mean that if one saw that in a brief period
(15) of time a complex system was produced, then that would
(16) severely constrain the unintelligent mechanisms that
(17) might have produced it.

(18) So since one can divide the world into intelligent
(19) and unintelligent causes since they are mutually
(20) exclusive, then if you say that the unintelligent causes
(21) seem implausible, that is kind of a negative argument
(22) for an intelligent activity.

(23) Q: But the sudden production of these new types that we are
(24) talking about, is a claim that that occurred one that
(25) Intelligent Design can properly make?

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(1) A: That they occurred suddenly, no. Intelligent Design
(2) does not require intelligently designed structures to
(3) appear suddenly. But I think the point is that complex
(4) structures that do appear suddenly are unlikely to have
(5) been produced by unintelligent causes.

(6) Q: But that is not answering my question. You had made an
(7) assertion in your report about claims that Intelligent
(8) Design can properly make.

(9) A: Yes.

(10) Q: You limit it really to the mechanism?

(11) A: That's correct.

(12) Q: I am asking you would an assertion of the sudden
(13) production of new types, like birds or fish, would that
(14) assertion be one that Intelligent Design Theory can
(15) properly make?

(16) A: I am not intending to be difficult. I am just trying to
(17) understand what you are trying to say.

(18) Q: I appreciate that if that occurred, one might well
(19) conclude that Intelligent Design was responsible?

(20) A: Yes.

(21) Q: That's not my question. You have been very precise
(22) about what Intelligent Design can claim and cannot
(23) claim. And if I got up and said Intelligent Design
(24) provides that types of organisms could appear suddenly,
(25) abruptly?

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- (1) A: Could appear or must appear?
- (2) Q: Could or did appear suddenly, would that be a claim that
- (3) Intelligent Design could properly make?
- (4) A: That is an empirical claim that has to be made by
- (5) paleontology or an eyewitness or something like that.
- (6) It is not a theoretical claim that an intelligent design
- (7) theory could make.
- (8) Q: Do you have — can you describe how irreducibly complex
- (9) systems came into being according to Intelligent Design
- (10) Theory?
- (11) A: No.
- (12) Q: Let's go now to the issue of mechanism. On page eleven
- (13) of your report, you say Intelligent Design Theory
- (14) focuses exclusively on the proposed mechanism of how
- (15) complex biological structures arose.
- (16) When you use the term mechanism in that sentence,
- (17) what do you mean?
- (18) MR. WHITE: Eric, you are talking about the top
- (19) paragraph?
- (20) A: The underlined portion?
- (21) BY MR. ROTHSCHILD:
- (22) Q: And both.
- (23) A: The means by which the structure was affected, was put
- (24) together.
- (25) Q: The means by which the structure was put together?

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- (1) A: Yes. More or less, yeah.
- (2) Q: Be sure.
- (3) A: Well, I don't think I am prepared to give an on the spot
- (4) precise definition of mechanism. But yes, I will say
- (5) tentatively the means by which the structure was brought
- (6) into being.
- (7) Q: And then you go on to say that Intelligent Design
- (8) focuses exclusively on the fifth claim of Darwinism
- (9) (natural selection) in Ernst Mayr's list?
- (10) A: Right.
- (11) Q: I am correct that you don't doubt that natural selection
- (12) can explain some aspects of biology?
- (13) A: That's right.
- (14) Q: What aspects of biology can natural selection explain?
- (15) A: Natural selection can explain — can at least explain
- (16) small changes in preexisting structures. Small
- (17) understood as small changes in the genetic coding for
- (18) some of those features.
- (19) Q: Could you turn to page 22 of Darwin's Black Box?
- (20) A: (Witness complies.) Yes.
- (21) Q: Last paragraph, a little more than halfway down, you say
- (22) this is not to say that random mutation is a myth or
- (23) that Darwinism fails to explain anything. (It explains
- (24) micro-evolution very nicely.)
- (25) When you make that statement, what do you mean by

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- (1) micro-evolution?
- (2) A: Small changes in preexisting systems.
- (3) Q: And what are you distinguishing micro-evolution from?
- (4) A: The large changes necessary to build new and complex
- (5) systems.
- (6) Q: Would you characterize that as macro-evolution?
- (7) A: I don't like to use those words because they are tied up
- (8) with paleontology and other things. I would just say
- (9) large — new biochemical systems or large changes in
- (10) biochemical systems.
- (11) Q: When you say that macro-evolution deals with issues of
- (12) paleontology, is part of what you are saying that that
- (13) gets into the question of speciation, whether one
- (14) species can evolve into another?
- (15) A: Yeah. I think different people define them different
- (16) ways. But yes, I think micro-evolution is sometimes
- (17) defined as evolution at the species level or maybe
- (18) between the species level, but that macro-evolution is
- (19) above the species level.
- (20) Q: Using those definitions, do you have a scientific
- (21) opinion on whether natural selection can explain
- (22) evolution above the species level?
- (23) A: I do not have a strongly held opinion because the
- (24) scientific community does not know what would
- (25) distinguish one species from another or one family from

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- (1) another or groups of organisms from each other.
- (2) Q: Is it fair to say that the concepts that you focus on in
- (3) your book at the biochemical level, irreducible
- (4) complexity, don't really address the question of whether
- (5) speciation could occur, that new species could have
- (6) evolved from older ones?
- (7) A: That is substantially correct. I did say that this does
- (8) not — and I emphasize very strongly that this is an
- (9) argument at the molecular level. But I also cautioned
- (10) that if one concludes that Intelligent Design is
- (11) involved at the molecular level, then one shouldn't be
- (12) too swift in concluding it was not involved for things
- (13) that we do not know how they developed.
- (14) Since the scientific community does not know in
- (15) detail how large changes even at the organismal level
- (16) could be produced by small cumulative changes in DNA, I
- (17) simply recommend keeping an open mind.
- (18) Q: But you have not taken a position on that?
- (19) A: That's correct.
- (20) Q: And to your understanding, has Intelligent Design Theory
- (21) generally taken a position on that issue?
- (22) A: Has Intelligent Design Theory? Again, there are — no.
- (23) Intelligent Design in general does not focus on whether
- (24) something is a new species or a new family or whatever.
- (25) It looks at specific structures and asks whether

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[1] specific structures could have been produced by
[2] unintelligent processes or required Intelligent Design.
[3] So Intelligent Design Theory would not take a stand on
[4] that question.
[5] Q: If it did, that would be improper, that would be an
[6] improper claim?
[7] A: I would have to see the exact claim. It might be. If
[8] it was couched in a particular way, it would in fact
[9] touch on some of the issues that are proper to
[10] Intelligent Design. But it might not. I would have to
[11] see.
[12] Q: Is it fair to say that if common descent is correct,
[13] then speciation has occurred?
[14] A: Yes.
[15] Q: Do you take a position on whether natural selection can
[16] produce new genes with new functions?
[17] A: I say that it can.
[18] Q: Can?
[19] A: Yes.
[20] Q: Is that in any way part of Intelligent Design Theory?
[21] A: Is what, that new genes can be produced by natural
[22] selection?
[23] Q: Right.
[24] A: Only in the sense that it is the background information
[25] we have against which we develop Intelligent Design

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[1] Theory.
[2] Q: Would the assertion that natural selection cannot
[3] produce new genes with new functions be an improper
[4] claim by Intelligent Design?
[5] A: I would have to see the context. If it were meant —
[6] one would have to decide what was being claimed to be
[7] the new function and the new gene. New genes — one
[8] could define a new gene as an old gene with just one
[9] small change in it.
[10] Q: I am just asking the general proposition if someone said
[11] natural selection cannot produce new genes with new
[12] functions, would that be an improper claim on behalf of
[13] Intelligent Design Theory?
[14] A: Unless it was qualified to say it was just small
[15] changes, then that would be too overly broad, yes.
[16] Q: I received a report that when you spoke to Dover
[17] residents, you said evidence of natural selection is
[18] imaginary?
[19] A: I did not say that.
[20] Q: I don't have a piece of paper that says it. It was just
[21] something that was reported to me. Why don't we take a
[22] break?
[23] (A recess was taken.)
[24] AFTER RECESS
[25] BY MR. ROTHCHILD:

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[1] Q: Mike, what is the proposed mechanism of how complex
[2] biological structures arose according to Intelligent
[3] Design Theory?
[4] A: Intelligent Design does not propose a mechanism. It
[5] simply tries to support the conclusion that intelligent
[6] activity was involved in producing the structures.
[7] Q: When you say in your report that Intelligent Design
[8] Theory focuses exclusively on the proposed mechanism of
[9] how complex biological structures arose, it really
[10] doesn't propose a mechanism at all?
[11] A: It does not propose. It focuses on the mechanisms that
[12] other theories have proposed and tries to show why they
[13] are inadequate. But it itself does not have a mechanism
[14] understood as how physically the parts were put
[15] together. It does not have one to propose.
[16] Q: So when you say Intelligent Design Theory focuses
[17] exclusively on the proposed mechanism of how complex
[18] biological structures arose, you mean that it is an
[19] argument against the mechanism suggested by what you
[20] call Darwinian Evolution and nothing else?
[21] A: No. It's not only that. It's also the contention that
[22] whatever the mechanism, it was an intelligently directed
[23] one.
[24] Q: But in terms of the mechanism, it is just a criticism of
[25] Darwinian Evolution's mechanism and not a positive

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[1] description of a mechanism?
[2] A: That's correct.
[3] Q: If you turn to page 11 of your report —
[4] A: (Witness complies.)
[5] Q: — in the bottom paragraph, you say Intelligent Design
[6] is based entirely on empirical observable facts about
[7] biology plus logical inferences?
[8] A: Yes.
[9] Q: What are the empirical observable facts you are
[10] referring to?
[11] A: The structures of the molecular machinery and such that
[12] have been discovered in the cell.
[13] Q: Nothing else?
[14] A: No. As well as the — as well as experiments that try
[15] to demonstrate the ability of other processes to account
[16] for them or the lack of experiments that show the
[17] ability of other mechanisms or other ideas to account
[18] for them.
[19] Q: And when you are talking about experiments, what
[20] experiments are you talking about?
[21] A: There have been experiments in which bacteria have been
[22] grown in laboratories over extended periods of time.
[23] And in my view, they have failed to show that random
[24] mutation and natural selection could come up with new
[25] complex biochemical systems.

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[1] Q: So these are experiments you have reviewed, but not
[2] experiments you have done?
[3] A: That's correct.
[4] Q: Or anyone else in the Intelligent Design community has
[5] done?
[6] A: That's correct.
[7] Q: What are the logical inferences that comprise
[8] Intelligent Design?
[9] A: The logical inferences is a process of inductive
[10] reasoning. When we see complex systems -- functional
[11] complex systems, we have always seen that such systems
[12] have required design to produce.
[13] And now we see similar systems in the cell.
[14] Systems which the entire biological community calls
[15] molecular machines because like machines in our everyday
[16] experience, they are intricate, they are precise, they
[17] use force, they accomplish purposes.
[18] And when we come across such systems in our
[19] everyday world, we always conclude that they required
[20] intelligent design. And by a process of induction when
[21] we come across such things in other places too, then we
[22] are justified in concluding design.
[23] Q: And when you have presented this to lay audiences you
[24] use the if it looks like a duck and quacks like a duck
[25] and walks like a duck, it is probably a duck?

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[1] A: In recent months, I have done that, yes.
[2] Q: I can't resist. Is it your expert opinion that ducks
[3] are intelligently designed?
[4] A: Daffy Duck is. Certainly the clot and blood clotting
[5] systems in ducks are intelligently designed.
[6] Q: You don't have an expert opinion on whether ducks --
[7] A: Ducks en masse, no, I do not.
[8] Q: When you say that when we see functional systems --
[9] complex functional systems in our everyday world, we
[10] have always found them to be designed, what kind of
[11] functional systems are you talking about?
[12] A: Things like say mousetraps that I pictured in my book,
[13] Darwin's Black Box. Systems that have interactive
[14] parts, the parts have to be precisely or very closely
[15] made so that they function with other parts of the
[16] system to produce the functioning work of the system.
[17] Q: I know I have discouraged you from using the example,
[18] but you have also invoked Mt. Rushmore repeatedly.
[19] Where does that fit in?
[20] A: Again, that is a system, it is not a mechanical system,
[21] of course, like a miscellaneous trap, but we easily
[22] recognize design because we see a number of precisely
[23] matched parts or finely matched parts that work together
[24] to give a particular -- seem to have a particular
[25] function. For example, portraying the image of George

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[1] Washington.
[2] And so whenever we see systems like that, at least
[3] ones that are really specific and finely done, we reach
[4] a conclusion of design.
[5] Q: Just so we are clear, when you are talking about these
[6] functional complex systems that we recognize design for
[7] in our everyday world, are we only talking about
[8] mechanical devices like mousetraps or are we also
[9] talking about nonmechanical objects like Mt. Rushmore?
[10] A: We can also be talking about the nonmechanical objects,
[11] too.
[12] Q: I will yield to your affection for Mt. Rushmore and ask
[13] you to sort of walk me through the inductive reasoning
[14] that you are referring to in the case of Mt. Rushmore
[15] that you think is analogous to or identical to the kind
[16] of reasoning we would do to conclude that a molecular
[17] system is intelligently designed?
[18] A: Well, for example if you look at the face of George
[19] Washington on Mt. Rushmore, first of all, you look at
[20] this mountain and you notice that the rocks are in a
[21] special relation to each other, such that one rock is in
[22] a position and such a size as to convey the image of a
[23] nose. And next to it are ones that are recessed and
[24] shaped in such a way as to look like eyes and mouth and
[25] so on.

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[1] And when we see something like that, we
[2] intuitively judge from our experience that such thing is
[3] not a coincidence. It is not the result of an
[4] earthquake or erosion or volcanic activity or some such
[5] thing because the likelihood of all of those pieces
[6] forming so as to produce that image is beyond our
[7] willingness to credit.
[8] Q: When you say we intuitively judge as part of this
[9] inductive reasoning -- let me rephrase that.
[10] This kind of inductive reasoning that you just
[11] described, is this part of a scientific practice or
[12] methodology, or is this just something that every slob
[13] can do?
[14] A: It is a common ability. It is not restricted to
[15] scientists, but scientists also can do it. Even in our
[16] common experience, everybody walks down the road and can
[17] look to the left and recognize that maybe a flower bed
[18] had been arranged and look to the right and say there's
[19] dandelions scattered about the lawn. And maybe they
[20] don't look like they have been arranged.
[21] We easily conclude design for one, arrangement,
[22] and a pass on judgment of design for another.
[23] Q: I take it in the case of molecular systems, it is not
[24] your -- you are not asserting that every lay person can
[25] come to the conclusion of Intelligent Design by

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(1) observing the physical characteristics of the structure?

(2) A: Well, if the structure is laid out before them and

(3) explained, I think they can apprehend or they can see

(4) the basis on which the design conclusion is made.

(5) Q: They would understand it if you explained it?

(6) A: Yes. And I have had experience explaining it to a

(7) number of lay audiences, and they generally understand.

(8) Q: For example, if Eric Rothschild who is scientifically

(9) as unsophisticated a person as you might find was shown

(10) the hemoglobin example that you described and the

(11) bacterial flagellum, is it your position that is sort of

(12) something a lay person in each circumstance could

(13) discern one was intelligently designed and the other

(14) might not have been?

(15) A: I think the hemoglobin would be more difficult. The

(16) bacterial flagellum, I think even unsophisticated Eric

(17) Rothschild would be able to appreciate that. Especially

(18) if I got a little movie or illustration of how it

(19) worked, and we saw the parts moving in relationship to

(20) each other and instructed people on exactly what was

(21) going on, I think that yes, I think that even

(22) nonscientists could appreciate that.

(23) Q: I am not so much talking about appreciating it. It can

(24) be explained to them. But is the inductive reasoning

(25) that you are talking about part of the scientific

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(1) activity, is it a scientific enterprise?

(2) A: Yes, it is. Logic is part of science. Induction is

(3) part of logic. But logic is not restricted to the

(4) scientific community. One doesn't need a Ph.D. to

(5) exercise critical judgment and to be logical.

(6) It is my experience when I show drawings of a

(7) bacterial flagellum to lay audiences, they quickly grasp

(8) the difficulty for Darwinian Evolution and quickly grasp

(9) the point about Intelligent Design.

(10) Q: I mean would you agree that that same — that a lay

(11) audience could easily be convinced that the human eye

(12) was intelligently designed by just looking at the

(13) marvelous composition that it is?

(14) A: I think many people — I think many people would be

(15) convinced of that, yes.

(16) Q: But you are not making that claim as part of your

(17) proposition of Intelligent Design?

(18) A: That is above the molecular level. I don't claim that,

(19) but I must add that it has not been demonstrated that it

(20) could arise by unintelligent processes either.

(21) Q: I guess to put a point on my question, is it your

(22) position that the reasoning — the inductive reasoning

(23) required to conclude that a biological system was

(24) intelligently designed must be carried out by a

(25) scientist or could we equally rely upon any lay person

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(1) to complete that part of the case for Intelligent

(2) Design?

(3) A: Most lay people do not know what is going on in the

(4) cell, which I think is why most lay people take the word

(5) of many scientists that Darwinian Evolution can account

(6) for it.

(7) When they are instructed however in the complexity

(8) of the molecular machinery in the cell, in my experience

(9) most lay people quickly see difficulties for Darwinian

(10) Evolution and quickly appreciate the argument for

(11) Intelligent Design.

(12) Q: I am trying to differentiate between one can understand

(13) it and appreciate it, and it actually being part of the

(14) scientific conclusion. Let me just give an example.

(15) We can all look at dinosaur bones, but there is an

(16) expertise that goes into determining the relationship

(17) between one fossil and another or a group of fossils;

(18) correct?

(19) A: Yes.

(20) Q: You wouldn't expect me or you to do that as well as

(21) Kevin Padian?

(22) A: Right.

(23) Q: So I am trying to get a feel for whether we can make

(24) that same distinction in terms of the inductive

(25) reasoning that goes into a determination of Intelligent

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(1) Design at the molecular evolution, or if you and I are

(2) equally situated in terms of making that inference?

(3) A: It would require some knowledge of the structure. You

(4) cannot conclude design or non design if you don't know

(5) the structure you are speaking of, yes.

(6) Q: So the inductive reasoning we are talking about here is

(7) a somewhat specialized enterprise?

(8) A: The subset of inductive reasoning applied to

(9) biochemistry does indeed require somebody to know what

(10) biochemistry has discovered. So there aren't as many

(11) people who know that.

(12) Q: Now I want to go to the inductive reasoning that we

(13) might use to evaluate systems in our everyday world. A

(14) mousetrap is one example you gave.

(15) In the case of a mousetrap, we have all seen that

(16) they are constructed by humans; correct?

(17) A: I don't think so. I have never seen a mousetrap being

(18) constructed. I would bet most people in this room

(19) haven't either.

(20) Q: Fair enough. Is there any discipline that you —

(21) scientific discipline that you think — specialized

(22) scientific discipline that goes into reasoning that

(23) objects that we are familiar in the world were

(24) intelligently designed?

(25) A: Yes. There's archeology. There is also I guess

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1) forensic sciences as well, cryptography.

2) Q: And in fact in Of Pandas, it is stated that archeology
3) has pioneered the development of methods for
4) distinguishing effects of natural and intelligent
5) causes. Is that a proposition you agree with?

6) A: I would have to know more about archeology. I have to
7) admit I don't know much about their methods.

8) Q: You acknowledge that part of what archeology does is,
9) for example, look at stone objects and try and reason to
10) a conclusion of whether those stones were just — the
11) structure of those stones was simply the result of
12) erosion or in fact were worked on by human hands to come
13) to that structure?

14) A: In marginal cases, archeology does that. But in the
15) cases of nonmarginal cases, if you see a large Egyptian
16) pyramid or so on, it doesn't take an archeologist to
17) realize it was designed.

18) Q: That is something you could conclude?

19) A: Yes, even me.

20) Q: And, again, explain to me how you would reason that that
21) structure was designed.

22) A: Okay. We will call it the Sphinx then. I would reason
23) to say the Sphinx was designed because I could see the
24) features — in a well done Sphinx, well preserved, I
25) could see the features of the rock and stone which

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1) corresponded to features in a human face, an idealized
2) human face. I would realize that the probability of
3) such a thing happening by erosion or some unintelligent
4) process like that is very, very small.

5) And so inductively, I would conclude that things
6) like that are designed.

7) Q: Inductively, you would conclude that humans designed it;
8) correct?

9) A: I probably would think so. But if somebody came along
10) and said that a space alien had beamed it down, that
11) would not contradict my conclusion of design. I might
12) be surprised by it, but it would not contradict my
13) reasoning to design.

14) Q: Is your understanding of the field of archeology that
15) the conclusions that archeologists try to make is simply
16) that an object was intelligently designed, or do they
17) attempt to reach the conclusion that humans designed the
18) particular artifact?

19) A: Well, frankly, I am not all that familiar with what
20) archaeologists do. I assume for the most part, they
21) assume that designed objects were made by humans.

22) I imagine there are cases though when they might
23) have to decide whether something was made by an animal
24) or animals who mimic or construct structures.

25) There are claims by — what's his name — Von

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1) Hencken. There are people who talk about space aliens

2) coming to the earth, which, of course, I am quite

3) skeptical of. But I assume that an archeologist would

4) at least be able to come to a conclusion that some

5) nonhuman designer with intelligence could have made some
6) artifact.

7) Q: Let's unpack that a little bit, could have made some

8) artifact. So when an archeologist looks at an artifact,

9) part of what the archeologist is building into his or

10) her conclusion is could a particular actor have done

11) what I see here; right?

12) A: You mean if they're trying to conclude who the designer

13) was, could the Mayans have designed some object?

14) Q: Sure.

15) A: In some cases, I imagine. In dealing with design, you

16) have to be sensitive to the fact that there are marginal

17) cases where you might be suspicious, but which you

18) cannot say for sure are designed. I wrote about them in

19) Darwin's Black Box.

20) If you look at rock formations — if you look from

21) the earth at rock formations on the moon, to some people

22) it looks like there's a man on the moon, a face of a man

23) on the moon. Was that designed? Maybe. As I say in

24) the book, who knows? Maybe space aliens a long time

25) ago.

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1) Probably most people would not find the evidence

2) sufficiently compelling to say that yes, that was

3) designed. There are chance processes which occasionally

4) throw up structures that remind us to one degree or

5) another of some object.

6) But then there are cases which are not marginal

7) which are much more compelling. And back to Mt.

8) Rushmore again, it doesn't matter if the man on the moon

9) is ambiguous. Our conclusion with respect to Mt.

10) Rushmore is very firm because it is not a marginal case.

11) It has got lots of features that fit the function, the

12) visage of George Washington.

13) So with the archeologists — to get back to your

14) original question — if they were excavating in a Mayan

15) village and they came across some complicated object

16) maybe say a detailed carving of a cat or something, and

17) somebody — again, I am no archeologist, but if the

18) archaeologist says Mayans didn't like cats or didn't

19) have cats or anything like that, they would not conclude

20) that the object was not designed. They might conclude

21) that somebody other than a Mayan did it, or it is

22) probable that somebody other than a Mayan did it, or

23) some renegade had a kitty cat for a pet.

24) But they would not conclude that, therefore, this

25) statue arose by random processes just because their

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(1) closest candidate for a designer did not seem to be
(2) interested in producing such things.
(3) Q: Go back to Mt. Rushmore. You said we see the
(4) characteristics of a face; right?
(5) A: Yes.
(6) Q: And we recognize that as a human face?
(7) A: Yes.
(8) Q: Meaning it is a depiction of something akin to
(9) ourselves?
(10) A: Right.
(11) Q: So that is consistent with the idea that it is something
(12) a human would create; is that fair?
(13) A: It is consistent, but it does not require that it must
(14) have been a human that did that.
(15) Q: We also can come to some conclusions about human's
(16) capability of creating a structure of the kind we see in
(17) Mt. Rushmore?
(18) A: That's correct.
(19) Q: Including their capabilities at that point in history?
(20) A: Yes.
(21) Q: What their physical abilities were?
(22) A: Right.
(23) Q: What their technological resources were?
(24) A: Right.
(25) Q: Even if we didn't have a historical record of its

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(1) creation, we would be able to develop some models of how
(2) they actually did it?
(3) A: That's correct.
(4) Q: For example, if we go back further in history to
(5) something like Stonehenge, we have to figure out how the
(6) rocks moved there and how they got up there?
(7) A: That's right. But what we don't do in the case of
(8) Stonehenge is even if we can't figure that out, we do
(9) not conclude that the figures weren't designed, that
(10) they came about by a random process.
(11) We apprehend the design. And then there are a lot
(12) of other questions which follow which are interesting
(13) like who did it, how did they do it, and so on. And we
(14) look for answers to those questions.
(15) But the conclusion of design for Stonehenge and
(16) for Mt. Rushmore, even if you didn't see anybody around
(17) who looked as if they had any ability to make that
(18) structure, you would still conclude it was designed, but
(19) if you were interested in the identity of the designer,
(20) you would have to look elsewhere.
(21) Q: Just to continue this, in the case of something like
(22) Stonehenge, we can make a judgment about the motives of
(23) the actor who designed Stonehenge; correct?
(24) A: I'm not sure. I am sure some people can speculate on
(25) it. Once more, even in the absence of a motive, we

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(1) would still not conclude that the faces of Stonehenge
(2) were the result of an accident, or erosion, or some such
(3) thing.
(4) Q: I think you mixed your mind when you said faces of
(5) Stonehenge.
(6) A: It is getting late.
(7) Q: So all of these aspects of the design of the object,
(8) motive, who the designer was, abilities, resources are
(9) available to the person studying Mt. Rushmore or
(10) Stonehenge, but are outside the purview of intelligent
(11) Design as it is currently described?
(12) A: Well, a couple of things. I actually don't think the
(13) ability to figure out what Stonehenge was about was
(14) available at the time when it was first discovered and
(15) recognized to be designed. I am not read up on
(16) Stonehenge. But as far as I understand, it was a
(17) mystery for centuries how such things could have been
(18) designed.
(19) Intelligent Design in regard to biology does not
(20) say we can never understand how the structures of cells
(21) or the structures of life were designed. Maybe we will
(22) at some point. Lots of scientific propositions have
(23) central questions unanswered when they are first put
(24) forward, and Intelligent Design is no exception to that.
(25) So I don't think it is different — that different

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(1) from Stonehenge in that respect.
(2) Q: And another difference between Stonehenge and the
(3) biological systems that you are talking about is that
(4) biological systems and their parts have an ability to
(5) replicate themselves?
(6) A: Yes. That is a difference.
(7) Q: And Stonehenge and mousetraps don't? Mice do.
(8) Mousetraps don't.
(9) A: Yes. No analogy is ever great. But if the ability to
(10) reproduce does not specifically address how the
(11) appearance of design could have come about, then the
(12) analogy to Stonehenge becomes much stronger than if that
(13) weren't the case.
(14) Q: I mean no analogy is great, but this one is central to
(15) your assertion?
(16) A: Stonehenge? It is more the mousetrap that is central.
(17) Q: Equally unable to reproduce or replicate?
(18) A: Mousetraps are made in factories. So you could just as
(19) a thought experiment say to yourself suppose there were
(20) changes in the factory which caused little changes in
(21) the mousetrap, and how would that explain its structure.
(22) And it is surprisingly difficult to even then come up
(23) with a route for a gradual production of an interactive
(24) machine like a mousetrap.
(25) Q: Let's go talk a little bit more about irreducible

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(1) complexity. We have your definition on page 39 in
(2) Darwin's Black Box. It has been slightly tweaked in
(3) your "Reply To Your Critics" article?
(4) A: Yes.
(5) Q: One of the things you say on the next page of Darwin's
(6) Black Box on page 40 — let me withdraw that for a
(7) moment.
(8) Your definition of irreducibly complex talks about
(9) production directly; correct?
(10) A: Yes.
(11) Q: And then on page 40, you talk about the fact that you
(12) cannot rule out the possibility of an indirect
(13) circuitous route?
(14) A: That's correct.
(15) Q: And then in that first paragraph, you say that as the
(16) number of unexplained — you say that the likelihood of
(17) such an indirect route is pretty darn small to
(18) paraphrase?
(19) A: Yes.
(20) Q: And you say as the number of unexplained irreducibly
(21) complex biological systems increase, our confidence that
(22) Darwin's criterion of failure has been met skyrockets
(23) towards the maximum that science allowed.
(24) I take it your criteria of failure is Darwin's
(25) statement that if it could be demonstrated that any

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(1) complex organ existed which could not possibly have been
(2) formed by numerous successive slight modification, my
(3) theory would absolutely break down. That is the
(4) statement. Only you are applying it to the molecular
(5) level?
(6) A: That's right.
(7) Q: What is the basis for your statement that our confidence
(8) that Darwin's criteria of failure has been met
(9) skyrockets towards the maximum that science allows?
(10) A: That is just a statement that says as more complex
(11) systems are discovered, the hypothesis that they all
(12) began as something else, and changed into something
(13) else, and then further on something else at say the
(14) amino acid level requires a level of function and a
(15) level of — a level of frequency of complex interactive
(16) machines that we have no experience of seeing.
(17) In our experience, we don't see one machine by
(18) small undirected steps turn into a different type of
(19) machine, and then by more small undirected steps turn
(20) into another type of machine and finally end up as a
(21) mousetrap or an outboard motor or some such thing.
(22) Q: When you made this statement, have you quantified this
(23) at all?
(24) A: I have not.
(25) Q: Has anybody?

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(1) A: Nobody has specifically done so. But if one has a
(2) knowledge of biochemistry, then one can have reasons to
(3) be skeptical.
(4) Q: I am not the attorney who is going to be deposing Bill
(5) Dembski so I haven't vetted his work completely, but I
(6) understand he has a sort of probabilistic contribution
(7) to Intelligent Design Theory?
(8) A: That's correct.
(9) Q: Does that link up with your proposition at all?
(10) A: It does.
(11) Q: How is that?
(12) A: Well, he tries to calculate probabilities that
(13) particular structures such as the flagellum would arise
(14) by unintelligent processes if there are no selectable
(15) states between the beginning and the end and comes up
(16) with very small probabilities.
(17) Q: So built into his — is what you just described the
(18) concept of specified complexity?
(19) A: It is not the concept itself. It is how one tries to
(20) determine if a system is sufficiently complex. That is
(21) how you go about it.
(22) Q: And am I correct in understanding that what you just
(23) described — the analysis you just described assumes the
(24) correctness of your proposition of the irreducible
(25) complexity of the bacterial flagellum?

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(1) A: That's correct. If there are no selectable states from
(2) individual proteins to this complex molecular machine,
(3) then this is the probability we would come up with.
(4) Q: Okay. Are you aware of Mr. Dembski applying that method
(5) to any other molecular system?
(6) A: No.
(7) Q: Are you aware of him applying that methodology to any
(8) biological system?
(9) A: Well, you mean other than a biochemical system?
(10) Q: Right.
(11) A: No.
(12) Q: If we could go back, I want to ask you some questions
(13) about the definition of irreducible complexity. My
(14) questions — I realize you have described the definition
(15) as being just the sentence that begins by irreducibly
(16) complex, page 39?
(17) MR. WHITE: Of Exhibit 3?
(18) MR. ROTHSCCHILD: Yes.
(19) A: That's correct.
(20) BY MR. ROTHSCCHILD:
(21) Q: I appreciate that it was tweaked. But then there is
(22) another sentence that I have always treated as part of
(23) the definition, but I will take your word for it, that
(24) follows it with the statement that an irreducibly
(25) complex system cannot be produced directly by slight

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(1) successive modifications, just the next sentence?
(2) A: That is the next sentence.
(3) Q: You don't consider that part of the definition, but
(4) further elaboration?
(5) A: That's correct.
(6) Q: I am going to ask you some questions about both of these
(7) sentences. I appreciate you're not saying that is the
(8) definition, but I still want to ask you questions about
(9) both.
(10) A: Okay.
(11) Q: In that second sentence, you say an irreducibly complex
(12) system cannot be produced directly, that is by
(13) continuously improving the initial function which
(14) continues to work by the same mechanism.
(15) What do you mean by continue to work by the same
(16) mechanism?
(17) A: Just that it has the same — it works — the parts
(18) interact in the same way as they do at the beginning.
(19) Q: So if natural selection had created the bacterial
(20) flagellum, one would see some precursor that moves the
(21) bacteria in a similar way?
(22) A: If natural selection — let me repeat your question. If
(23) natural selection was responsible for the bacterial
(24) flagellum, would we see simpler precursors that moved in
(25) the same way?

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(1) Well, I think if natural selection had made the
(2) bacterial flagellum, we would see a very large series of
(3) intermediate mechanisms which connect one to another by
(4) steps of small — of reasonable probability which would
(5) continuously increase the efficiency of the system.
(6) Q: But it has to work by the same mechanism?
(7) A: If it is going to be produced directly, yes.
(8) Q: Why is that part of the equation of irreducible
(9) complexity?
(10) A: Why is what exactly?
(11) Q: That it worked by the same mechanism.
(12) A: Because that essentially is what I mean by directly. If
(13) you are working by a different mechanism, then you have
(14) to develop one way of doing something and then switch it
(15) into a different way of doing something, then perhaps
(16) switch it into multiple different ways before you
(17) finally end up to the structure we see today. I
(18) consider that to be an indirect route.
(19) Q: Then if I am also correct, you talk about continuously
(20) improving the initial function until you get to the
(21) function as it exists in the irreducibly complex system;
(22) correct? Bad question. I will try that again.
(23) A: Okay.
(24) Q: I think I understand you to be saying when we talk about
(25) the function of the system, you limit your description

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(1) of irreducibly complex systems to systems where the
(2) function that is there at the end was also operating in
(3) the precursor; is that right?
(4) A: Well, I think I am looking at it from a different
(5) direction. I see that the system at the end is working
(6) a particular way by a particular mechanism. And how it
(7) would work by other mechanisms is not clear. And how it
(8) would change between mechanisms is not clear.
(9) So to point out for the reader the difficulty for
(10) Darwinian processes step by step, tiny steps to get to a
(11) complex system, I point out that the present system is
(12) working in this complex way, and that it is not at all
(13) obvious how other circuitous routes might have produced
(14) this.
(15) Q: You talk about you have the system. It is functioning.
(16) If you removed a part, it would cease functioning?
(17) A: Yes.
(18) Q: When you say cease functioning, you mean functioning the
(19) way it functions when it has all the parts, the
(20) flagellum moves the bacteria?
(21) A: Yes. I believe I'd say it causes the system to cease
(22) functioning. So I mean the functioning of the system.
(23) So the bacterial flagellum would no longer be able to
(24) work as a rotary propulsion device and so on.
(25) Q: If one found an example of — if one took away a part of

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(1) the bacterial flagellum and it still functioned — and
(2) it still survived but did not function as a rotary
(3) motor, that would not fit your definition?
(4) A: What would not fit?
(5) Q: The example I just gave would not be a response to your
(6) challenge of irreducible complexity?
(7) A: That's correct. If you took away a part of the rotary
(8) motor and you saw that it could work as a paperweight
(9) then or even as a gasoline pump or some such thing, that
(10) would not go any part of the way towards explaining the
(11) system in my argument.
(12) Q: And just to keep it in the arena of molecular systems,
(13) one proposition that has been asserted — and I realize
(14) it may not be one you agree with — is that the type
(15) three secretion system was a precursor to the bacterial
(16) flagellum?
(17) A: That has been asserted. But nobody — if I might add,
(18) nobody has even attempted to show in journals how the
(19) type three system could have arisen by Darwinian means
(20) or then been converted into a flagellum by Darwinian
(21) means at the level of detail that would be required to
(22) actually test the hypothesis.
(23) Q: A few questions. First of all, I understand there is
(24) some dispute about which came first here, the chicken or
(25) the egg?

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(1) A: Exactly.
(2) Q: I want you to assume for the purpose of my questioning
(3) that there was a case made for type three before
(4) bacterial flagellum?
(5) A: Somebody has made that case.
(6) Q: So we won't argue —
(7) A: Whether it is correct or not.
(8) Q: — whether it is correct. Now you said that even those
(9) who are made that case have not demonstrated in
(10) sufficient detail how the secretion system evolved to
(11) the bacterial flagellum?
(12) A: That's correct.
(13) Q: What would be the demonstration — and sorry. Let's put
(14) aside the question of how you got to the type three
(15) secretion system in the first place; okay?
(16) A: Okay. But I just note that you are starting with a very
(17) complex machine.
(18) Q: Fair enough.
(19) A: As it is.
(20) Q: Fair enough. But you have made the assertion that you
(21) have an irreducibly complex system. If you took away a
(22) part it wouldn't function?
(23) A: It would no longer function. The system would no longer
(24) function, that's correct.
(25) Q: And I take it what you are saying is even if one

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(1) demonstrated natural selection that caused type three
(2) secretion system to evolve to bacterial flagellum, that
(3) doesn't address your challenge of irreducible complexity
(4) because it is not the same function?
(5) A: Could you repeat that, please?
(6) Q: Actually, let's back it up one level. First, what would
(7) it take to — what level of evidence is required to
(8) demonstrate that in fact type three evolved through
(9) natural selection to bacterial flagellum?
(10) A: With, I will say that an enormous amount of evidence
(11) would be required involving many, many experiments
(12) demonstrating what natural selection is capable of
(13) doing, elucidating what sort of selective effects that
(14) we would expect to have, showing that none of these
(15) steps had unexpected detrimental effects as well, a
(16) whole host of experiments.
(17) In my opinion when one says how did this evolve by
(18) Darwinian processes from say type three, even if we are
(19) starting at this level, to the bacterial flagellum, one
(20) is covering light years of difficulty. And it is not a
(21) matter of just sitting down in your armchair and kind of
(22) thinking of what might be intermediate, or even going
(23) into experiment — into a laboratory and doing one or
(24) two experiments and saying gee, that looks like the way
(25) it happened.

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(1) To be confident that such a thing could happen
(2) would require many, many experiments. And none of them
(3) have been done, which is one reason why I am skeptical
(4) that Darwinian Theory can explain such things.
(5) Q: I will tell you that I am struck by the fact of how high
(6) the bar is for demonstrating natural selection, but you
(7) are saying that Intelligent Design of the bacterial
(8) flagellum requires no experimental evidence.
(9) A: Well, that is because there is an asymmetry in the
(10) claims of design and Darwinian Evolution. What both are
(11) trying to explain is the strong appearance of design in
(12) the cell.
(13) If you read Richard Dawkins, the blind watchmaker,
(14) and I think I quote him at several points on one of my
(15) reports, he says biology is the study of things that
(16) give the strong appearance of design. He talks about
(17) the overwhelming appearance of design in various
(18) passages.
(19) He does not think it is true. But the point is
(20) that the physical evidence we see, just like the
(21) physical evidence of Mt. Rushmore, strongly suggests
(22) design to people who know about it.
(23) If somebody looked at Mt. Rushmore and says that
(24) was designed, and somebody else came along and says no
(25) no, no, there was a river flowing by here and the wind

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(1) kind of crossed over and that is how the faces came up,
(2) and you said, where is your evidence? And he says well,
(3) gee, that is what all my colleagues think, but there is
(4) no demonstration of that, no experiment on that in the
(5) literature, and you say I don't think that is true. I
(6) think it was designed.
(7) He says where is your evidence? And you say look
(8) at those faces. That is the evidence. So I think it is
(9) entirely proper to be confident of the conclusion of
(10) design based simply on what we have and to strongly
(11) question assertions that unintelligent processes could
(12) produce these things. Because the exact problem that
(13) the all purported explanations for these things in the
(14) cell are trying to address is the strong appearance of
(15) complex, functional, sophisticated apparently designed
(16) machinery.
(17) Q: So the burden of proof is heavily on the Darwin side?
(18) A: That's correct.
(19) Q: That's because it looks designed to us humans in the
(20) same way a mousetrap looks designed?
(21) A: Because of our inductive reasoning, that's correct.
(22) Q: Going back to the type three and bacterial flagellum,
(23) putting aside all the issues of proof, I think if I
(24) understand you correctly, you are saying that example
(25) falls outside my concept of irreducible complexity

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11) because even if it occurred as suggested, and even if
12) natural selection was demonstrated, that doesn't count
13) because the functioning of the system is different at
14) the different stages; is that right?

15) A: Well, my point is that it does not explain the rotary
16) propulsion function of the flagellum; that the function
17) of the type three secretory system itself has nothing to
18) do with propulsion.

19) There are many other secretory systems known in
20) bacteria, none of which have anything to do with
21) propulsion.

22) The connection between the propulsion —
23) propulsive activity and the protein secretory activity
24) is apparently — there is no necessary connection
25) between the two. If it had been discovered that the
26) bacterial flagellum also had a function which could
27) hydrolyze sucrose when a part was removed, that would
28) have nothing to do with explaining the rotary propulsion
29) activity either.

30) Furthermore, the discovery of the type three
31) secretory systems makes the flagellum a much more
32) complex object than it was thought to be when I wrote my
33) book. And so to me as a skeptic of Darwinian Theory, I
34) see people trying to appeal to a more complex object to
35) explain one they couldn't explain when it was a less

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36) complex object. And so I remain skeptical that those
37) types of examples don't convince me.

38) Q: By the way, when you talk about the bacterial flagellum,
39) is there a particular bacterial flagellum you are
40) referring to?

41) A: Well, I refer to the common one which is generally
42) pictured in a biochemistry textbook by Voet & Voet, and
43) that is one from *E. coli*.

44) Q: Do you have a position on whether strains of bacteria,
45) the flagellum for strains of bacteria other than *E. coli*
46) are also irreducibly complex?

47) A: As I understand, most are variations on the basic theme
48) of the bacterial flagellum. And therefore, I would
49) expect them to have similar difficulties.

50) Q: The proposition we are discussing, either secretion
51) system to the flagellum or flagellum to the secretion
52) system, to the extent that has merit, is that a direct
53) route or an indirect route?

54) A: You mean if in fact Darwinian processes did somehow by
55) some unexplained way produce first the type three
56) secretory system and then by some unexplained way
57) produce the flagellum after that, would that be an
58) indirect route? Yes, that would be an indirect route.

59) Q: Would that be an example of exaptation?

60) A: Exaptation? If such a thing occurred, it might be an

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61) example of exaptation, but you would have to do a lot of
62) work to determine that in the first place.

63) Q: At the organism level or the organ level, do you
64) recognize that exaptation is a valid scientific
65) explanation for how different characteristics evolved?

66) A: I think it is a pretty fuzzy explanation myself. I
67) think it is more just a label that people put on things
68) rather than an explanation.

69) It doesn't explain where the structure that is
70) being exapted came from in the first place. It doesn't
71) explain how the structure fit the new function. It
72) doesn't explain what forces might have caused that to
73) happen.

74) Essentially, it is just a convenient label to say
75) that well, yeah, there was this structure, and
76) apparently it is involved in something else. But it is
77) more of a label than an explanation.

78) Q: Are you familiar with the literature on the evolution of
79) the mammalian middle ear bone?

80) A: No.

81) Q: What about the literature on the development of the wing
82) of the bird?

83) A: Not really, no.

84) MR. WHITE: We've almost gone an hour. Do you
85) want to take a break?

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86) MR. ROTHSCHILD: Sure.

87) (A recess was taken.)

AFTER RECESS

BY MR. ROTHSCHILD:

88) Q: As you define irreducible complexity, you limit the
89) definition to a single system; correct?

90) A: Yes.

91) Q: Explain to me what you mean by a single system.

92) A: Well, because living things are made up of molecules and
93) it turns out science has discovered in the past hundred
94) years or so that the foundational level of life is the
95) molecular level, and so when I mean a single system, I
96) mean a single system composed of a number of molecules,
97) generally proteins, which has some identifiable
98) recognizable function.

99) Q: I just want to make sure I get this right because I
100) think your definition of single system included a single
101) system. Let me make sure I get it precise.

102) A single system is — you said a single system is
103) composed of a number of molecules, generally proteins,
104) which has some identifiable recognizable function?

105) A: Yeah.

106) Q: What is the limiting principle? Is it the number of
107) molecules? Is it the fact of a function? How do you
108) distinguish showing as a single system from something

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1 that is more than a single system?

2 A: It would necessarily be smaller than a cell. It would
3 generally be one in which the component parts acted on
4 each other to either modify or bind to each other. And
5 it would have to have a generally single and coherent
6 function.

7 And a good example, again, is the flagellum, the
8 parts of which form a coherent structure which works
9 together to form a rotary propulsive device.

10 Q: Okay. Is this concept of a single system something that
11 is defined in biochemistry?

12 A: It is assumed, but I don't recall anyplace where it is
13 defined.

14 Q: What do you mean it is assumed?

15 A: People talk of, say for example, the blood clotting
16 system or the proteasome which degrades proteins or
17 other coherent entities in the cell that have relatively
18 well defined roles. But nobody bothers with
19 constructing a definition for them.

20 Q: Is every structure found in the cell a single system, or
21 are there structures that are multisystem?

22 A: There can be multisystem structures. One example might
23 be say the cell membrane which contains a number of
24 different proteins, as well as lipids and carbohydrates
25 and so on.

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1 Q: So that would not qualify for an irreducibly complex
2 system as you define it?

3 A: Right.

4 Q: If a biochemist went into the world of the cell and was
5 asked to label structures single systems or not single
6 systems, what would you tell him to do — or her?

7 A: I would tell him to see if there was a well defined
8 function for a number of different components, look to
9 see if the components acted upon each other to produce
10 the function.

11 And if that were the case, then I would say try
12 to — I would say that is probably what I mean by a
13 system. But I guess I should — let me just say a
14 comment.

15 My point in all of this is not a rhetorical one to
16 come up with definitions for entities in biology that
17 never have — cannot be challenged or don't have
18 shortcomings. And that is not unique to me. It is hard
19 to define life. It is hard to define species. It is
20 hard to define a number of things related to biology.

21 My purpose is to try to direct attention on what I
22 perceive to be a difficulty for current understanding.

23 Q: Is that an admission that your limitation to single
24 systems is not precise?

25 A: It means you have to consider the system itself, and it

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1 is hard to consider it in the abstract without looking
2 at what you are talking about.

3 Q: So effectively what you are saying is if I wanted to
4 challenge the concept of irreducible complexity,
5 understanding I would need to limit my challenge to
6 single systems, I would really have to tell you what the
7 systems are, and you would let me know if that was a
8 single system or multisystem?

9 A: I would certainly have my opinion on it, yes, and I
10 would be glad to share it with you.

11 Q: And there is no external reference that I could turn to
12 to try to cull those out myself?

13 A: Well, most scientists are not used to thinking about
14 problems such as this. There are not many people in the
15 scientific community who would have written on this
16 before, yes.

17 Q: And the reason I ask is clearly the systems you are
18 talking about, as you acknowledge, they have multiple
19 parts. And I am trying to understand when I see a
20 system that has multiple parts, how I know whether or
21 not it is a single system as you define it or something
22 else.

23 I think you are telling me there is no real
24 demarcation line?

25 A: Well, there are certainly some clear examples. There

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1 are some examples which are less clear. But for the
2 clear examples, they are clear. And so we can worry
3 about the unclear examples later.

4 Q: And in your book Darwin's Black Box, you give several
5 examples of irreducible complexity. One is the
6 bacterial flagellum?

7 A: Yes.

8 Q: And you would stand by your statement that is a single
9 system?

10 A: Yes.

11 Q: Then there is the blood clotting cascade?

12 A: Right.

13 Q: Is that a single system?

14 A: Yes.

15 Q: The — another word I will butcher — the eukaryotic
16 cilium?

17 A: Yes.

18 Q: Is that a single system?

19 A: Yes. It is a single system.

20 Q: And the immune system?

21 A: The immune system in general, there are a number of
22 different systems that are under the title of immune
23 system.

24 I wrote specifically in Darwin's Black Box about
25 one aspect of the immune system, the aspect which

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(1) generates antibody diversity.

(2) Q: I would like one minute to look at a letter and get it
(3) out. No response, but I will take it as a yes.

(4) MR. WHITE: Something separate from this?

(5) MR. ROTHSCHILD: Yes.

(6) BY MR. ROTHSCHILD:

(7) Q: I apologize. On the immune system, is the aspect of the
(8) immune system that you are talking about the adaptive
(9) immune system?

(10) A: Yes.

(11) Q: Is that aspect of the immune system a single system?

(12) A: The system for generating antibody diversity, yes.

(13) Q: Is a single system?

(14) A: Yes.

(15) Q: Is it your position that all complex molecular systems
(16) are intelligently designed?

(17) A: No.

(18) Q: And we gave the hemoglobin example. That was one you
(19) said was not necessarily intelligently designed. Is
(20) that a complex molecular system?

(21) A: Well, in my book I said starting from a protein such as
(22) myoglobin, which is similar to one of the subunits of
(23) hemoglobin, is it possible to get a hemoglobin like
(24) molecule by natural selection? As far as I can tell, it
(25) is it possible.

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(1) That aspect of it, I am not saying the entire
(2) molecule, but I am saying going from a single to a
(3) tetramer may be within the capability of natural
(4) selection.

(5) Q: That is one example, but is that the only example of a
(6) molecular system that you acknowledge is not
(7) intelligently designed?

(8) A: Again, I didn't say it wasn't intelligently designed.
(9) We don't have evidence that it was. And we don't have
(10) experimental evidence that Darwinian processes could
(11) have done it.

(12) I am just saying that I don't know at this point.
(13) It seems simple enough that I for the purposes of
(14) argument will concede that it could be produced by
(15) natural selection.

(16) There are other things for which I am not sure we
(17) have enough evidence. There are some systems that I
(18) think the evidence is reasonably convincing that
(19) Darwinian processes could produce them, and they are
(20) relatively complex depending, but not complex — not
(21) irreducibly complex in the way I define irreducible
(22) complexity.

(23) There are complex systems like the membrane of the
(24) cell which I would not argue are irreducible. There are
(25) a number of other aspects of the cell that I do not

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(1) argue require Intelligent Design.

(2) Q: Can you give me some other examples?

(3) A: I can give you an example of a protein whose activity I
(4) think is reasonably ascribed to natural selection. And
(5) there's a group of proteins called antifreeze
(6) proteins — perhaps you have read about them — which
(7) act as antifreeze in organisms which live in subfreezing
(8) temperatures at least for part of their lives.
(9) There is a protein which was discovered in some
(10) species of fish that lives in the Antarctic Ocean where
(11) the temperature of the water is actually a couple of
(12) degrees colder than the freezing point of the blood of
(13) the fish.

(14) And the protein that was identified as being able
(15) to preserve the fish from freezing has some similarities
(16) to other proteins. And the people who discovered it and
(17) who sequenced the gene and the protein for it made what
(18) I thought was a convincing case that by relatively small
(19) steps, one could improve the ability of this protein to
(20) inhibit freezing and eventually lead by small steps,
(21) each one better than the other, in a Darwinian fashion
(22) to the protein that is present today in the fish.

(23) And it's my conclusion that that is possible by
(24) Darwinian processes because they clearly showed that
(25) there were small steps, one could improve the function.

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(1) And in addition, there are many intermediate steps which
(2) can be visualized in the protein.

(3) They are currently — even after tens of millions
(4) of years — or millions of years anyway in the protein
(5) still multiple copies of this protein, some of which
(6) vary from each other.

(7) So in my opinion, that is a pretty good example of
(8) what I would expect a Darwinian process to lead to. But
(9) that is certainly the exception rather than the rule.

(10) Q: Was that demonstrated experimentally or just with an
(11) explanation for how it occurred?

(12) A: It was demonstrated partly by experiment and partly by
(13) explanation. The experiment was to sequence the protein
(14) and sequence the gene and other parts of — there are
(15) multiple copies of the gene for this protein, some of
(16) which vary from each other in various ways.

(17) And it was clearly demonstrated which steps would
(18) be necessary, and that they were small. And there are
(19) residual structures — which is part of the experimental
(20) evidence. There are residual structures which appear
(21) intermediate between these two — between the original
(22) gene and the antifreeze gene. So it was a mixture of
(23) both.

(24) Q: There was no experiment that showed the development of
(25) this protein from precursors?

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- (1) A: That's correct.
- (2) Q: You used the cell membrane as the other example, and you
- (3) said that is not irreducibly complex. Does it have as
- (4) many parts as some of the systems you have described as
- (5) irreducibly complex?
- (6) A: Well, it depends on how you define a part. If you
- (7) define a part as a molecule, which is a reasonable thing
- (8) to do, then it has got zillions of parts.
- (9) Q: More than some of the systems you have described?
- (10) A: Many more, yes.
- (11) Q: Let's get to the topic of the adaptive immune system.
- (12) When you discuss this in Darwin's Black Box, were you
- (13) referring to any particular organism's immune system?
- (14) A: I was referring to the one which is general to the
- (15) vertebrates.
- (16) Q: Let's go back to Darwin's Black Box, page 138.
- (17) A: Yes.
- (18) Q: The second full paragraph.
- (19) A: Yes.
- (20) Q: In that paragraph, you say we can look high or we can
- (21) look low in books or in journals, but the result is the
- (22) same. Scientific literature has no answers to the
- (23) question of the origin of the immune system.
- (24) A: What page is that?
- (25) Q: 138.

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- (1) A: Okay. Thank you. Yes.
- (2) Q: And when you say the origin of the immune system, are
- (3) you talking about the evolution of the immune system
- (4) through natural selection?
- (5) A: That's correct.
- (6) Q: And is that — do you believe that was an accurate
- (7) statement when you wrote it, that the scientific
- (8) literature has no answers to the questions of the
- (9) evolution of the immune system?
- (10) A: Yes. The aspect of which I was writing, yes.
- (11) Q: The adaptive immune system?
- (12) A: The adaptive immune system, right.
- (13) Q: Do you really mean no answers?
- (14) A: No firm experimentally or detailed answers to how the
- (15) adaptive immune system might have evolved in a Darwinian
- (16) process by single mutations and natural selection.
- (17) Q: Now I take it that you haven't personally made any
- (18) attempt to develop that kind of Darwinian explanation
- (19) for the development of the immune system?
- (20) A: That's correct.
- (21) Q: You are not aware of anybody in the Intelligent Design
- (22) movement who has devoted any effort to that?
- (23) A: Most people think it would be an unproductive effort,
- (24) yes.
- (25) Q: Unproductive because they know the answer, or because of

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- (1) how difficult the experiment would be?
- (2) A: Because we think it is likely to be — it is likely that
- (3) the immune system was not produced that way. So
- (4) pursuing it would not be expected to generate positive
- (5) results.
- (6) Q: And I take it that you haven't made any attempt to
- (7) develop a Darwinian explanation of the type you
- (8) described for any other system you have described as
- (9) irreducibly complex?
- (10) A: In my book, I do describe a few simple scenarios of how
- (11) a Darwinian explanation might be attempted for a couple
- (12) of those. Then I show why I think those are unlikely.
- (13) But beyond that, I have not.
- (14) Q: And how about an Intelligent Design explanation for the
- (15) development of the immune system, have you developed a
- (16) model for how that would occur?
- (17) A: As I said, Intelligent Design does not specifically deal
- (18) with the question of how something was produced. It
- (19) just deals with the question of whether we can apprehend
- (20) the effects of intelligence in the system.
- (21) Q: Now among vertebrates, there are immune systems that
- (22) have different compositions; is that fair?
- (23) A: I am sure there are details that differ, yes.
- (24) Q: For example, are you familiar with the hagfish?
- (25) A: Not really very familiar.

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- (1) Q: Do you recognize it to be a vertebrate?
- (2) A: Yes.
- (3) Q: And do you have any awareness of the composition of its
- (4) immune system relative to other vertebrates?
- (5) A: I would have to refresh my memory.
- (6) Q: And then are you aware that there are organisms below
- (7) the vertebrate class that have immune systems that are
- (8) also differently composed than the vertebrates?
- (9) A: Yes.
- (10) Q: Is it fair to say that these organisms have some, but
- (11) not all, of the parts that the vertebrate's immune
- (12) systems have?
- (13) A: I would have to have that spelled out for me. I am not
- (14) quite sure what you are referring to.
- (15) Q: You don't know whether organisms, for example,
- (16) tunicates, which I have learned about recently, you
- (17) don't whether they have an immune system or not?
- (18) A: I would have to check that out as well.
- (19) Q: Sitting here today, you don't know how the immune
- (20) systems of classifications of animals outside
- (21) vertebrates compare to the immune systems of
- (22) vertebrates?
- (23) A: The vertebrate system appears in vertebrates. But
- (24) outside of vertebrates, there is different — there are
- (25) different mechanisms.

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Q: And again, you are agreed that under the principle of common descent, vertebrates share ancestors with non vertebrates many, many years ago?

A: Yes.

Q: Now if it were the case that the scientific literature did report answers to the question of the Evolution of the immune system, would that cause you to reconsider your claim that the immune system is irreducibly complex and could not have evolved through natural mechanisms?

A: If they were detailed and specific proposals for the development of the aspects of the immune system which are irreducibly complex, I would consider it. But often times speculations are confused with explanations. I would not count a speculation as an explanation.

Q: When I don't say detailed and specific, do you mean testable?

A: Testable is a great idea. Yes, testable, and also essentially a mutation by mutation analysis. If preferable an amino acid by amino acid analysis showing why the change was an improvement, showing why it did not have detrimental effects and other such detailed questions.

Q: Now when we talk about a mutation by mutation analysis, I take it that would be a heck of a lot of mutations?

A: Yes, it would.

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Q: I realize you apprehend that to be a challenge to the Darwinian mechanism?

A: I do.

Q: But it is also as a practical matter a challenge to the scientific research community to literally demonstrate the development of something as complex as the immune system step by step; is that fair?

A: That is the nature of the problem, yes. It is a complex problem. And one can't just say because it is complex, we will pass over rigorously demonstrating it and just assume it to be true.

In order to be confident that is correct, there is no avoiding such detailed work.

Q: Again, Intelligent Design has no similar burden?

A: Again, Intelligent Design is apprehended by the structure of the system. So it has a different — it has different problems to address than do Darwinian assertions.

Q: Now when you made the claim in Darwin's Black Box about the scientific literature relating to the immune system — let me get your precise language — you said the scientific literature has no answers to the questions of the origin of the immune system, what was your method for surveying the scientific literature?

A: I went to abstracts of leading journals. And often

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times at the year end, they list the papers by topic which have been published in the journal during the year. I surveyed a number of journals for ones that had published papers with titles that seemed likely to bear on the topic of the Darwinian Evolution of complex molecular systems.

And I surveyed a number of journals and looked up a number of papers that seemed to have tantalizing titles, and was often times always disappointed that the title did not actually deliver the specified answer that had been implied.

Q: How many journals did you look at for this purpose?

A: I would guess tenish, about ten.

Q: What time period starting backwards from 1996 did you use?

A: Maybe 15 years or so.

Q: And that survey was of peer reviewed literature?

A: Yes.

Q: At pages 136 and 137, you describe a couple of articles on the subject of the evolution of the immune system that you did read, one by David Baltimore?

A: Yes.

Q: And there was another one titled Evolution of the complement system?

A: Right.

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Q: And evolution of the complement system is actually a different part of the immune system than what we are talking about, right?

A: That's correct.

Q: But I take it neither of these articles met your standard of what would constitute answers to the questions of the evolution of the immune system?

A: Before I answer yes, I'd just like to say that I do not think this is my standard. I think the standard is required by the complexity of the system itself.

If one is trying to explain how a computer came to be, you can't gloss over details. And if one really wants to understand how these systems came to be, you can't just say these details are too hard for us to figure out so we will just assume that that happened. The details are critical.

I don't think I am being petulant in trying to look for papers that really attend rigorously to step by numerous step which Darwin said his theory would work by. I think I am just demanding of Darwin's Theory what it promises it has.

Q: You have acknowledged that natural selection is a valid concept at least for some aspects of biology?

A: That's correct.

Q: And in fact has been experimentally demonstrated;

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[1] correct?
[2] A: That's right.
[3] Q: So I mean it is not a total fiction?
[4] A: No, I never said — I have always insisted that natural
[5] selection does explain some things in biology.
[6] Q: So your quarrel is with extending the application of
[7] natural selection to these complex biochemical
[8] structures?
[9] A: That's right. The assumption that I am challenging is
[10] that natural selection explains everything in biology.
[11] Not that it explains some things. I acknowledge it
[12] explains some things.
[13] Q: I think what we are coming to agreement here on is the
[14] very complexity of the structures that you are talking
[15] about makes the complexity of the difficulty of the
[16] demonstration extremely great?
[17] The same complexity which you apprehend as a
[18] challenge to the Darwinian mechanism is a challenge — a
[19] practical challenge to the demonstration of the
[20] Darwinian mechanism?
[21] A: It is a practical challenge. It is a practical
[22] challenge to that demonstration. There is also a reason
[23] for thinking that maybe the Darwinian mechanism is not
[24] correct. Because if intelligent scientists in their
[25] laboratories who are setting up conditions to examine

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[1] what natural selection could do and are able to screen
[2] out all the bumps and difficulties of the natural world
[3] can't show that it has much power to do anything such as
[4] we are seeing here, then it gives somebody who is
[5] skeptical of Darwinian Theory reason to think that maybe
[6] nature can't do that either.
[7] Q: Are you familiar with the transposon hypothesis for the
[8] evolution of the immune system?
[9] A: Yes.
[10] Q: Can you explain what that is?
[11] A: Well, it is that genes for a recombination system in a
[12] bacterium which can rearrange DNA in the bacterium were
[13] somehow transferred to a eukaryotic, and they seem to be
[14] similar to the genes which help to rearrange genes in
[15] the immune system. Some people think that the proteins
[16] for those systems originated from the bacteria.
[17] Q: Okay. Does that constitute a Darwinian explanation in
[18] your view?
[19] A: Well, it certainly — let me say one can explain things
[20] in detail, and one can make brief stories about things.
[21] That is a brief and speculative story. It has got some
[22] interesting pieces of data to go with it, that is the
[23] similarities in protein structure.
[24] But it does not even address the critical question
[25] of what caused such a thing to happen. Could that have

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[1] happened by natural selection, by small changes plus
[2] natural selection? I have not seen it argued in
[3] sufficient detail to even make a judgment about whether
[4] such a thing is possible.
[5] (Behe Exhibit 9 was marked.)
[6] BY MR. ROTHSCHILD:
[7] Q: One article — and it has been marked as an exhibit —
[8] that you didn't include in Darwin's Black Box is this
[9] article by Sakano and others in Nature from July, 1979.
[10] Are you familiar with this article?
[11] A: No, I am not.
[12] Q: You don't have any way to judge whether it provides data
[13] in support of the transposon hypothesis?
[14] A: I haven't read the article so I don't know.
[15] Q: Since the publication of Darwin's Black Box, have you
[16] continued to survey the scientific literature in the way
[17] you did to write Darwin's Black Box for answers to the
[18] questions of the evolution of the immune system?
[19] A: Well, since the book has been published, I have
[20] certainly kept my eye out, but I have had to make a lot
[21] less effort because people send me candidate articles,
[22] e-mail me about them. So I do try to keep abreast of
[23] that, yes.
[24] Q: You do that for all of the irreducibly complex systems
[25] you identified in Darwin's Black Box?

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[1] A: I try to keep aware of it, yes.
[2] Q: Is it still your position that there is no scientific
[3] literature answering the question of the evolution of
[4] the immune system?
[5] A: The adaptive immune system?
[6] Q: Yes.
[7] A: Yes.
[8] (Behe Exhibit 10 was marked.)
[9] BY MR. ROTHSCHILD:
[10] Q: I have marked as Exhibit 10 an article by Susanna Lewis
[11] and Gillian Wu again dealing with this issue of the
[12] evolution of the adaptive immune system.
[13] Is this an article you are familiar with?
[14] A: No, I am not.
[15] Q: Looking it over, do you recognize it as an article that
[16] is addressed to the question of the evolution of the
[17] adaptive immune system?
[18] A: It seems to be another kind of speculative article which
[19] as far as I can see does not report any results of
[20] experiments, which is a relatively short article. But
[21] it does deal with the immune system.
[22] Q: Just having flipped through it in the last thirty
[23] seconds, you have deduced it as speculative?
[24] A: I would have to read it in detail. If it was a serious
[25] attempt to address this question, it would necessarily

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(1) be much longer.

(2) MR. ROTHSCILD: I am going to mark another
(3) exhibit Behe 11.

(4) (Behe Exhibit 11 was marked.)

(5) BY MR. ROTHSCILD:

(6) Q: This is an article in Nature by Zhou and others?

(7) A: Yes.

(8) Q: And have you seen this article before?

(9) A: I have not seen this.

(10) Q: So in your efforts to keep abreast of the literature on
(11) the evolution of the immune system, neither of these
(12) articles is something that you have stumbled upon?(13) A: I have not read these, and I would be waiting for larger
(14) news stories to point to these things — to point to
(15) significant developments in understanding these systems.(16) Q: I am not sure I understand that. What would you be
(17) looking for?(18) A: I would be looking for more than this let me just say.
(19) I haven't read this paper so I am not quite sure what it
(20) says. In my experience in the past, papers which
(21) purport to explain evolutions — the evolution of
(22) complex systems such as described in Darwin's Black Box,
(23) often times either focus on very small aspects or are
(24) speculative or overlook problems that a real Darwinian
(25) pathway would have to deal with.

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(1) Q: It sounds like that is your working assumption about
(2) anything that comes across?

(3) A: It is, and it is based upon experience.

(4) Q: You said you would expect to have been made aware of an
(5) article through other news or something to that effect.
(6) I wasn't sure what you meant by that.(7) A: Well, a real detailed explanation for understanding such
(8) a system would I think be large news across the
(9) scientific community. So that one would see not only an
(10) occasional article even in Nature dealing with a topic,
(11) one would see reviews in scientific literature such as
(12) the annual reviews summarizing not only some step that
(13) some people are trying to address, but the overall
(14) multiple problems that such a system would have to deal
(15) with.(16) I would expect maybe even Scientific American or
(17) the New York Times or some such publications to have
(18) large headlines saying that finally we have an
(19) understanding of at least one molecular system.(20) Q: So when you talked about keeping abreast of the
(21) literature, it's sort of indirectly so to speak? If big
(22) news comes over the transom that will make you aware
(23) that it has happened, but you are not trying to survey
(24) the literature that is going on in the scientific
(25) journals every month?(1) A: I read papers that I come across that look promising. I
(2) don't know read all papers. There's a very large
(3) literature in all of science of course.(4) The ones that I do in fact come across have not
(5) looked all that — looked promising. And I have become
(6) convinced over the years that this is an unlikely route
(7) to explain such systems. And therefore, it is lower on
(8) my priority than other things.(9) Q: And so there's a lot of literature in the scientific
(10) community. There is in fact a lot of literature on the
(11) evolution of the immune system?(12) A: When you say the evolution of the immune system, you
(13) have to qualify that further. If you asked if you mean
(14) the evolution of the parts of the immune system which
(15) are irreducibly complex, and if you further qualify that
(16) by saying by detailed demonstration of how random
(17) mutation and natural selection could lead to these
(18) things step by step, there is not a large literature on
(19) that.(20) Q: And the kind of article you are talking about where it
(21) would describe the evolution of the immune systems
(22) mutation by mutation, is that within the abilities of
(23) modern science right now; could they do it?(24) A: Well, when you say could they do it, it assumes that it
(25) could be done. In the sense that it assumes that this

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(1) system might have occurred by mutation by mutation.

(2) I think that if in fact Darwinian Evolution were
(3) true, then there should be pathways that smart people
(4) such as work on these things would be able to discern
(5) and develop telling experiments to answer some of these
(6) questions.(7) I think part of the problem why there isn't more
(8) activity in this area and why it seems to be a difficult
(9) problem even to start to address for science is that
(10) because this is really a poor framework for which to
(11) design experiments for which to try to understand the
(12) origin of the immune system.(13) Q: Just going back to this article by Zhou, do you
(14) recognize that it does in fact report experimental
(15) research?

(16) A: It does seem to, yes.

(17) Q: And if you go to the conclusion, could you read the
(18) conclusion section?

(19) A: The whole thing there?

(20) Q: Yes.

(21) A: We have directly established the pathway of DNA breakage

(22)

(23) Q: You don't have to read it aloud.

(24) A: I am sorry.

(25) Q: I understand the confusion.

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(1) A: Okay. I have read it.
(2) Q: Looking at that, do you recognize it to be describing
(3) some aspects of the operation of Darwinian processes to
(4) develop the immune system?
(5) A: No. I am afraid I don't. It looks like many, many
(6) other papers that I have read which simply assume that
(7) Darwinian processes explain this.
(8) There is nothing in here — I didn't see the
(9) phrase natural selection in this conclusion here. There
(10) is no consideration of selective pressures, of
(11) difficulties that such a system would face or any of
(12) numerous details that a real explanation would have to
(13) account for.
(14) Q: Mr. Zhou will be disappointed.
(15) A: Well, we can be friends, anyway.
(16) Q: Is the proposition that the origin of some aspects of
(17) living organisms is best explained as the result of
(18) deliberate Intelligent Design a testable proposition?
(19) A: Yes.
(20) Q: How would you test that proposition?
(21) A: I have written about this in a couple of articles,
(22) including the one in Biology and Philosophy, "Reply to
(23) My Critics". I have written that if it could be
(24) demonstrated that random mutation and natural selection
(25) could build irreducibly complex molecular machinery,

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(1) which I say cannot be developed by a non intelligent
(2) process, then my assertion would be falsified.
(3) Q: That is the assertion of irreducible complexity;
(4) correct?
(5) A: Yes.
(6) Q: I am not asking whether you can test the proposition of
(7) irreducible complexity. I want you to assume that an
(8) aspect of a living organism is irreducibly complex as
(9) you have defined it and could not have arisen through
(10) natural selection.
(11) Explain how you could test the proposition that
(12) that aspect of the living organism, the system was the
(13) result of Intelligent Design.
(14) A: The assertion is the following: The assertion is that
(15) the system under consideration could not arise by
(16) unintelligent processes, and therefore, there is no
(17) competing unintelligent explanation for what we see.
(18) If it was shown that unintelligent processes could
(19) produce the system, then my claim that intelligence was
(20) needed would be falsified.
(21) Q: So the test you are talking about is to demonstrate that
(22) natural selection could produce the system?
(23) A: Yes. The test is essentially that for Darwinists to
(24) show that their process can do what they claim for it.
(25) Q: And that test is a test of natural selection, but I

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(1) don't see how it is a test for the positive assertion of
(2) Intelligent Design.
(3) A: Okay. I am getting a little bit confused. Again, the
(4) assertion of Intelligent Design as I have said, the
(5) claim of Intelligent Design is based on the structure of
(6) the system involved.
(7) There is, however, a counterclaim that says
(8) Darwinian Evolution says we can explain the appearance
(9) of design without intelligence. And if they made good
(10) on their claim, in my opinion, then that would both
(11) demonstrate the abilities of Darwinian Evolution and
(12) falsify the claim that such structures are the hallmark
(13) of design.
(14) Q: We will try this in a few ways. What I think you are
(15) saying is that the case for Intelligent Design is simply
(16) that the case for evolution does not work?
(17) A: No, that is not it. That is part of it, but that is not
(18) all of it.
(19) The case for design is, as I have said, the
(20) complex functional structure of the system we are
(21) looking at. I have said that that claim is based on
(22) inductive reasoning. And part of induction is that
(23) whenever we see such systems, we have always found them
(24) to be the result of Intelligent Design.
(25) However, if somebody comes up with a reason to say

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(1) that that induction is not true, that when we see this
(2) complex system which somebody in his laboratory produced
(3) by putting a culture of bacteria under selective
(4) pressure or something, if we see that this complex
(5) system was produced by Darwinian processes, then the
(6) inductive reasoning upon which the conclusion of
(7) Intelligent Design is based would be shown to be
(8) unreliable.
(9) Q: Now you say we infer to Intelligent Design in our
(10) everyday world all the time; correct?
(11) A: Yes.
(12) Q: And when we do that, we don't always get it right;
(13) correct?
(14) A: That's correct.
(15) Q: Are you familiar with the example of fairy rings?
(16) A: I am a little hazy, but I think I know what you mean.
(17) Q: Where a fungus grows, and it kills the grass in a sort
(18) of circular fashion?
(19) A: Yes.
(20) Q: And then I guess has vegetation grow in a circular
(21) fashion?
(22) A: Yes.
(23) Q: And historically was thought to be the work of fairies
(24) because there was no other known — there was no known
(25) natural explanation?

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(1) A: I will take your word for it. I don't know much about
(2) the —

(3) Q: The inference to Intelligent Design is not always
(4) correct; is that fair?

(5) A: Historically, there have been inferences to intelligence
(6) which have not been correct. But again, they are always
(7) in marginal cases.

(8) Fairy rings, circles, simple shapes and so on
(9) might look provocative, but they are not sufficiently
(10) complex in the current modern view of intelligent Design
(11) to reach any definitive conclusion.

(12) Coincidences do occur. When you get to things
(13) like Mt. Rushmore, it does not matter that people
(14) mistook fungus rings for the work of fairies. When we
(15) look at Mt. Rushmore, we are in no doubt that that was
(16) the result of intelligent activity.

(17) Q: Let's suppose that modern science had never come up with
(18) the concept of natural selection. Would there still be
(19) a scientific argument in your view that molecular
(20) systems are intelligently designed?

(21) A: Could you repeat that, please?

(22) Q: Just assume that Darwin never reared his ugly head.

(23) A: I thought he was cute.

(24) Q: And the proposition of natural selection as an
(25) explanation for the development of life had never been

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(1) made.

(2) A: Okay.

(3) Q: Would Intelligent Design Theory still be in your view a
(4) scientific theory explaining the origins of molecular
(5) systems?

(6) A: This, of course, is a hypothetical example, but I think
(7) the answer is certainly yes. We don't depend on
(8) Darwinian Theory to make conclusions of design for Mt.
(9) Rushmore and other such things in our lives.

(10) So I think the conclusion of Intelligent Design
(11) does not need Darwinian Theory as a foil or any such
(12) thing in order to make it a correct conclusion.

(13) Q: Okay. If Intelligent Design is a correct scientific
(14) conclusion for molecular systems, describe the test for
(15) the proposition that a particular molecular system, say
(16) the bacterial flagellum, was intelligently designed.

(17) What is the test?

(18) A: What is the test for showing it is intelligently
(19) designed? The test would be to find some other
(20) unintelligent means by which it could have been
(21) produced.

(22) For example, Stuart Kauffman, who is a Professor
(23) of Biology at the University of Calgary thinks Darwinian
(24) Evolution is wrong. He thinks Intelligent Design theory
(25) is wrong. And he proposes something called Complexity

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(1) Theory in which complex systems self organize.

(2) If in this hypothetical example where Darwinian
(3) evolution was never proposed. If in such a world one
(4) could falsify the proposal of Intelligent Design by
(5) showing how an unintelligent process, perhaps the
(6) processes studied by complexity theory, how they could
(7) have produced something that looked apparently designed.

(8) Q: And so am I correct in understanding that that is the
(9) only test for the proposition that the bacterial
(10) flagellum was intelligently designed, whether someone
(11) can identify a nonintelligent process for its creation?

(12) A: In brief, yes. Because the conclusion of Intelligent
(13) Design is based on inductive reasoning, and our constant
(14) experience that such things point to intelligence. In
(15) order to show that was incorrect, you would have to come
(16) up with an example where the induction did not hold.

(17) Q: So that inductive reasoning is effectively the
(18) proposition that William Paley articulated 200 years
(19) ago?

(20) A: If by the proposition that William Paley articulated
(21) 200 years ago, you mean his argument specifically in
(22) regard to a watch that somebody might stumble across
(23) when crossing a heat and observing how the parts
(24) interacted to produce the function of the motion of the
(25) machinery, it's very similar to that, yes.

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(1) Q: All that has been added to it through the proposition of
(2) irreducible complexity is a challenge to the alternative
(3) explanation of natural selection?

(4) A: No. I wouldn't say that. The watch by itself was
(5) irreducibly complex, even though William Paley did not
(6) realize it at the time. When he talked about how the
(7) parts interact to produce a function, he didn't have the
(8) concept of irreducibly complex in mind. And in other
(9) parts of his book on this topic, he kind of goes off the
(10) depend end and loses track of that insight.

(11) That itself points most strongly to design of many
(12) examples that he comes up to. So it is not simply an
(13) obstacle to Darwinian Evolution. It's the fact that
(14) such interactive systems are themselves good examples of
(15) interactive functional machinery.

(16) Q: In fact, he wasn't challenging Darwinian Evolution at
(17) all?

(18) A: Yes, that was part of my point. Thank you. I forgot to
(19) mention that he made this argument in the absence of an
(20) alternative — chief alternative that we have got these
(21) days.

(22) So he was saying that you don't need the
(23) alternative to somehow understand design. It is an
(24) inductive conclusion whenever we see these things.

(25) Q: So effectively the inductive reasoning that demonstrates

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(1) Intelligent Design that we are talking about today, it
(2) is Paley's argument?
(3) A: Well, he made it — he made the argument explicitly.
(4) But such reasoning I think goes back to the Greek
(5) philosophers.
(6) Let me add in my comments that in his book, Paley
(7) made a number of other arguments which I consider to be
(8) unsound, but his watchmaker argument I do consider to be
(9) correct.
(10) Q: We talked a little bit about your involvement with the
(11) Discovery Institute and you serve as a fellow for the
(12) Discovery Institute.
(13) In that capacity or generally, are you familiar
(14) with the document that has been called the Wedge
(15) document?
(16) A: Yes. I have heard about it. I think I read it once
(17) too.
(18) Q: When did you first become aware of the Wedge document?
(19) A: I am not very sure. I think a number of years ago, the
(20) first I heard about it was in hearing that somebody had
(21) placed a copy of it on the Internet, and then people
(22) were talking about it.
(23) Q: I take it you had no involvement in the creation of the
(24) document?
(25) A: That's correct.

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(1) Q: But you do understand it to be the product of the
(2) Discovery Institute?
(3) A: Yes; although, I don't know actually who wrote it.
(4) Q: Intelligently written by who?
(5) A: The identity of the designer is not clear.
(6) (Behe Exhibit 12 was marked.)
(7) BY MR. ROTHSCHILD:
(8) Q: If we turn to the first page with text in the document,
(9) the document talks generally about the problems created
(10) by the concept of materialism; is that fair?
(11) A: I believe so. I haven't read it recently. I think I
(12) remember that is the case.
(13) Q: It associates certain thinkers with the ascendence of
(14) materialism, and one of those is Charles Darwin?
(15) A: I see his name here, yes.
(16) Q: Then it goes on to say in the last column here, the
(17) Discovery Institute's Center for the Renewal of Science
(18) and Culture seeks nothing less than the overthrow of
(19) materialism and its cultural legacies; do you see that?
(20) A: No. Where is that?
(21) Q: In the first paragraph of the last column.
(22) A: Yes, I see that.
(23) MR. WHITE: I have a general objection to the
(24) authenticity since he doesn't know if this is truly the
(25) document from the Discovery Institute.

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(1) MR. ROTHSCHILD: If you have evidence that it is
(2) not, I welcome it.
(3) BY MR. ROTHSCHILD:
(4) Q: Again, this is the organization that you are a fellow —
(5) A: Yes.
(6) Q: — with; right?
(7) A: That's correct.
(8) Q: If we go to the page that says Five Year Strategic Plan
(9) Summary at the top, it has got a handwritten paid for on
(10) it?
(11) A: Yes, I have got it.
(12) Q: It talks about the source of materialism being
(13) scientific materialism. Do you have an understanding of
(14) what that term means?
(15) A: Not a very precise one.
(16) Q: Any understanding?
(17) A: I would suppose it means something like the assumption
(18) that matter and energy is all that actually exists.
(19) Q: Is that the same as methodological naturalism?
(20) A: Well, that question gets into some gray area. Some
(21) people claim that methodological naturalism is different
(22) because it does not postulate that there is no such
(23) actually existing entity which is not matter and energy.
(24) But it assumes so for certain purposes.
(25) So the question is, however, what is the effect of

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(1) such assumption on science.
(2) Q: Now then the document starts to talk about a
(3) metaphorical concept of a wedge splitting the tree trunk
(4) of materialism; right?
(5) A: Where is that? I am sorry.
(6) Q: Same paragraph.
(7) A: Yes, I see that.
(8) Q: And it describes the thin edge of the wedge as some
(9) publications by Phillip Johnson; correct?
(10) A: That's correct.
(11) Q: And Phillip Johnson is someone you have had some
(12) association with?
(13) A: Yes.
(14) Q: Not a scientist?
(15) A: That's right. He is a Professor of law at Berkeley.
(16) Q: A supporter of the Intelligent Design movement?
(17) A: Yes.
(18) Q: Doesn't provide any of the scientific concepts of
(19) Intelligent Design; does he?
(20) A: That's correct.
(21) Q: And he has been pretty open about the fact that he views
(22) the intelligent Design movement as primarily directed at
(23) furthering religious and philosophical goals; is that
(24) fair?
(25) A: I would have to see exactly what you meant by that. I

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[1] certainly think he is interested in philosophical
[2] issues.
[3] Q: And religious issues?
[4] A: He is interested in religious issues as well.
[5] Q: He has portrayed the Intelligent Design movement as
[6] having — as furthering religious objectives?
[7] A: He has portrayed it as removing obstacles to an
[8] objective evaluation of the evidence from science, yes.
[9] Q: I don't think that answered my question, and I think you
[10] know it.
[11] A: Well, again, I am not trying to be difficult.
[12] Q: You haven't been all day, but I think you were there.
[13] A: To the extent that a prior philosophical commitment
[14] impairs people's ability to reach a religious
[15] conclusion, I think he sees Intelligent Design as a
[16] useful — as a good argument to show that the impediment
[17] should not be there. That's it.
[18] Q: In fact, he has been pretty upfront that it is the —
[19] that the religious objective, that is his primary
[20] motivation for being involved with this issue?
[21] A: I am not sure that that is the case. In his first book,
[22] Darwin On Trial, I can't recall it very closely, but it
[23] did not impress me as making — as primarily making a
[24] case for religion.
[25] It primarily concerned showing how weak the

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[1] evidence for an unintelligent explanation for life was
[2] if one did not at the outset assume that an
[3] unintelligent mechanism had to be responsible for life.
[4] Q: But in other writings or in your interactions with him
[5] have you perceived him to be putting the religious
[6] aspect of this proposition at the forefront?
[7] A: In different — let me answer that in different venues,
[8] he has different concerns. He is, of course, a
[9] Christian. And there are many other Christians in the
[10] United States, and he shares some of the concerns.
[11] And I think that he — so when he speaks with
[12] other Christians or is directing comments to that
[13] audience, then he may have such concerns more prominent
[14] in his mind. But he also speaks to other groups,
[15] including people who simply want to know what is correct
[16] about the physical universe unfiltered by something such
[17] as scientific materialism which is talked about here.
[18] And so in those audiences, I think he genuinely is
[19] concerned to tell people that with their shared
[20] assumptions, that materialism does not necessarily have
[21] to be true, that the evidence for the claims of
[22] Darwinism is not very strong.
[23] Q: Right after the description of his books, the document
[24] says Michael Behe's highly successful Darwin's Black Box
[25] followed Johnson's work. Do you see that?

[1] A: I do.
[2] Q: Do you understand the document to be describing you as
[3] part of the wedge, your book is part of the wedge?
[4] A: I see that they note my book. I am not sure what you
[5] would mean by saying that the book is part of the wedge.
[6] Q: It says —
[7] MR. WHITE: I object. You are asking him to
[8] speculate.
[9] BY MR. ROTHSCHILD:
[10] Q: It says at the very beginning of this strategy, The Thin
[11] Edge of the Wedge was Phillip Johnson's book. Behe's
[12] book followed. And then it says right after that, we
[13] are building on this momentum, broadening the wedge with
[14] a positive scientific alternative to materialistic
[15] scientific theories which has come to be called the
[16] Theory of Intelligent Design.
[17] Do you understand your work to be swept up in that
[18] description?
[19] A: Again, I didn't write this. I am not even sure who did.
[20] I don't really know what they had in mind here.
[21] Q: Next sentence says Design Theory promises to reverse the
[22] stifling dominance of the materialist's world view and
[23] to replace it with a science consonant with Christian
[24] and theistic convictions. Do you see that?
[25] A: Yes.

[1] Q: And when you read this, you were aware of those words?
[2] MR. WHITE: Objection. When he read it now?
[3] BY MR. ROTHSCHILD:
[4] Q: No, he read it before.
[5] A: I read it a while back. I am sorry. What is the
[6] question?
[7] Q: You are aware of that language?
[8] A: Did I see the words there?
[9] Q: Yes.
[10] A: Yes, I saw them.
[11] Q: And that particular statement, is that consistent with
[12] your own objectives to develop Design Theory to reverse
[13] the stifling dominance of the materialist world view and
[14] replace it with a science consonant with Christian and
[15] theistic convictions?
[16] A: No, it is not. My purpose is to try to explain
[17] biochemical systems that science has discovered in the
[18] cell.
[19] Q: If that was a goal of a scientist, would that violate
[20] your rule that a scientific theory should not tailor its
[21] claims to agree with the scriptures of any religion or
[22] with any religious authority?
[23] A: I am sorry. Could you repeat that?
[24] Q: If that was a goal of a scientist, would you agree that
[25] it violates your rule that a scientific theory should

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(1) not tailor its claims to agree with the scriptures of
(2) any religion or with any religious authority?

(3) A: There are parts of this that I think I would agree with
(4) and parts that I think I would not. It would take me a
(5) while to explain it I think.

(6) Q: You are talking about this sentence?

(7) A: This sentence, yes.

(8) Q: The floor is yours.

(9) A: If a scientist thought that a preexisting philosophical
(10) assumption was in fact limiting the explanations
(11) possible for what he sees has been discovered in the
(12) natural world, then I think it is a reasonable activity
(13) for the scientist to point out and even to try to
(14) persuade people that such a philosophical assumption is
(15) limiting their view of the world.

(16) I would not think it a proper activity to do that
(17) simply with the goal of making the scientific hypothesis
(18) and theories we entertain more or less congenial to any
(19) particular religious or philosophical point of view.

(20) Q: To summarize, you have an objection to any scientist
(21) whose goal is to develop science consonant with
(22) Christian and theistic convictions?

(23) A: If by that you mean develop it in that respect no matter
(24) what the evidence shows, yes, that's correct. I would
(25) have an objection to that.

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(1) Q: And I mean if I were you and I felt that way and I saw
(2) my name associated with that proposition at a Think Tank
(3) that I am a fellow of, I would throw a fit.

(4) Did you throw a fit?

(5) A: I did not. I do not read into it what I think you are
(6) reading into it. So I am not — I don't think it's — I
(7) know the people who are associated with the Discovery
(8) Institute. I know none of them want to constrict
(9) science to follow Christian or other convictions.

(10) The motivating purpose of everybody I know at the
(11) Discovery Institute is rather to have science fairly
(12) evaluate evidence free of a large number — as free of
(13) philosophical stipulations and presuppositions as
(14) possible.

(15) Q: Now, this is talking about Intelligent Design Theory,
(16) right, Design Theory?

(17) A: Okay, yes.

(18) Q: That is your gig. You are one of the leading
(19) representatives of that, right?

(20) A: Yes, I am.

(21) Q: And I understand your point about the philosophical
(22) convictions entailed in a materialistic world view. I
(23) understand your point there.

(24) This also says that Design Theory promises to
(25) replace whatever else is out there with a science

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(1) consonant with Christian and theistic convictions.

(2) And you are telling me you are comfortable with
(3) that language, with your name being associated with that
(4) language?

(5) MR. WHITE: Objection. You are misrepresenting
(6) what he said.

(7) A: I did not say I was comfortable with that.

(8) BY MR. ROTHSCHILD:

(9) Q: You are uncomfortable with it?

(10) A: To tell you the truth, I pretty much ignored it because
(11) I viewed it as sort of boilerplate written by people who
(12) are more concerned with communicating with the broader
(13) public than the exact science itself.

(14) Q: You didn't shout out what is this, this isn't what I am
(15) all about; you didn't protest to the Discovery
(16) Institute?

(17) A: I am a low key fellow. I don't protest very often.

(18) Q: So this document that associates you with that
(19) proposition, you just let lay?

(20) A: Well, I don't think it associates me. If I went about
(21) objecting to every document that included my name in it
(22) since my book came out, I would be a busy fellow and
(23) wouldn't get to do much else.

(24) Q: It's a little different what it is a document prepared
(25) by a ThinkTank that you are a fellow at; correct?

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(1) A: Yes, it is. But I don't think this is — this did not
(2) strike me as requiring action.

(3) Q: And going back to the handwritten page two under the
(4) heading Goals?

(5) A: Yes.

(6) Q: The second goal listed here in the first column is to
(7) replace materialistic explanations with the theistic
(8) understanding that nature and human beings are created
(9) by God.

(10) Is that a goal of yours as a scientist?

(11) A: No.

(12) Q: Do you agree that that violates your rule that a
(13) scientific theory should not tailor its claims to agree
(14) with any particular religion?

(15) A: That's correct. I don't think here it's arguing about
(16) scientific theories, however.

(17) Q: You said early in the deposition that you were asked to
(18) communicate with Dr. Nilsen, get them to listen to the
(19) Discovery Institute's position; is that correct?

(20) A: That's correct.

(21) Q: Your understanding was the Discovery Institute was
(22) trying to convey that Intelligent Design was not
(23) sufficiently developed to be presented in the classroom;
(24) is that correct?

(25) A: That's correct.

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11 Q: Are you aware that Stephen Meyer who is the Director of
12 the Discovery Institute stated in a news article that
13 the Dover School Board got it wrong by including
14 Intelligent Design in the curriculum because Intelligent
15 Design —

16 MR. WHITE: Objection, assuming it is in the
17 curriculum.

18 MR. ROTHSCHILD: You must know different facts
19 than me, Ed.

20 MR. WHITE: Continue.

21 MR. ROTHSCHILD: Would you like an exhibit, Ed?

22 MR. WHITE: Sure. I wish you'd taken a break and
23 talk about how much longer you intend to go and what
24 other depositions might be on the seven hours.

25 MR. ROTHSCHILD: Do you want to take a break right
26 now?

27 MR. WHITE: Yes.

28 (An off-the-record discussion was had.)

29 BY MR. ROTHSCHILD:

30 Q: Are you aware that Stephen Meyer took the position that
31 the Dover School Board got it wrong by including
32 Intelligent Design in the curriculum because Intelligent
33 Design isn't established enough yet for that?

34 A: I am not quite sure. I haven't read his explanation for
35 that. I believe I read him saying that he got — he

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36 thinks they got it wrong. I don't remember him saying
37 why exactly.

38 Q: I think you said that you had not seen a newsletter that
39 was circulated to the Dover community; is that correct?

40 A: I don't think so.

41 Q: I am going to have go ahead and have it marked as an
42 exhibit. Then you can tell me whether you still feel
43 the same way.

44 (Behe Exhibit 13 was marked.)

45 BY MR. ROTHSCHILD:

46 Q: Do you recognize this document? I am not suggesting you
47 should have.

48 A: I do not, no.

49 Q: If you look at the left-hand column on the first page,
50 you see there is some frequently asked questions?

51 A: Yes, I see that.

52 Q: Then that continues on to the second page. What I want
53 to focus your attention on is the question what is the
54 theory of Intelligent Design?

55 Let me just ask you to read that to yourself and
56 tell me whether you think that provides an accurate
57 depiction of the Theory of Intelligent Design.

58 A: Just the section What is the Theory of Intelligent
59 Design?

60 Q: Yes.

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61 A: Yes. There are parts of that which do described what I
62 understand to be Intelligent Design, and there also
63 seems to be some commentary as well. It has got it in
64 there. It has also got extraneous things, too.

65 Q: Extraneous referring to?

66 A: Comments about Bill Gates and so on.

67 Q: Looking at that, you don't find anything about it to be
68 inaccurate?

69 A: Inaccurate? Well, growing numbers of scientists is in
70 the eye of the beholder. But the last sentence of the
71 first paragraph, its principal argument is that certain
72 features of the universe are best explained by an
73 intelligent cause rather than undirected causes such as
74 Darwin's Theory of Natural Selection, that is my
75 understanding of Intelligent Design, too.

76 Q: And the part about endorsed by a growing number of
77 credible scientists, you can't take a position on that
78 one way or the other?

79 A: That's correct.

80 Q: In your report, you had a fascinating section on the
81 practical utility Intelligent Design might have in the
82 area of the design of antibiotics?

83 A: Yes.

84 Q: And can you explain how Intelligent Design principles
85 would change how scientists approach the subject of

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86 antibiotic development in a way that would be helpful?

87 A: My point in that section is that when scientists look
88 for antibiotics, they are looking for compounds which
89 would be toxic to bacteria and which will be beyond the
90 ability of the bacteria to evolve resistance to.

91 It is known that, of course, natural selection can
92 produce antibiotic resistance in some bacteria to some
93 drugs. But apparently, it cannot do so for all drugs.

94 And that if one has reason to believe that there
95 are limits to unintelligent processes to Darwinian
96 selection, then one can be confident that the search for
97 an effective antibiotic which will not be rendered moot
98 by bacteria evolving resistance, one can be confident
99 that such a search may be fruitful. So that is what I
100 intended by that section.

101 Q: And you are not suggesting that anybody — evolution
102 suggests that the capacity of organisms to develop is
103 limitless; are you?

104 A: The current theory of Darwinian Evolution suggests that
105 organisms over long periods of time have remarkable
106 abilities to develop extremely sophisticated machinery
107 which do things which require much more sophistication
108 and many more components and so on than simply
109 detoxifying an antibiotic.

110 If evolutionary processes can do a more

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[1] sophisticated task, then it is reasonable to suppose
[2] that they would be able to do a less sophisticated task.
[3] But nonetheless, if one has reason to think that
[4] evolutionary processes can't do sophisticated tasks by
[5] themselves, that there are limits to what Darwinian
[6] processes can do, then one can search for those limits.
[7] And one practical benefit of searching for limits
[8] might be to find toxic compounds that bacteria would be
[9] unable to respond to.

[10] Q: Why would adhering to the Theory of Intelligent Design
[11] aid a scientist engaged in this process any more than if
[12] a scientist rejected Intelligent Design; wouldn't they
[13] still be looking to develop an antibiotic that bacteria
[14] can't evolve to defeat?

[15] A: A person who was confident that there are such limits to
[16] bacterial abilities would be more likely to look for
[17] such compounds. One doesn't look for something which
[18] one doesn't have good reason to think may be found.
[19] Just as an analogy, a person who believes in
[20] Einstein's theory that nothing can travel faster than
[21] the speed of light is unlikely to spend a lot of time
[22] looking for objects that can go faster than the speed of
[23] light.

[24] If a person assumes that Evolution is extremely
[25] powerful, extremely rapid and can do very impressive

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[1] things, then he is less likely to think that any
[2] solution one tries to achieve in terms of antibiotics or
[3] other such compounds will be effective for long.

[4] Q: You relied in part on an article by Barry Hall for this
[5] proposition?

[6] A: That's correct.

[7] Q: And the article by Barry Hall was addressing the
[8] potential limitations of bacteria to evolve to
[9] counteract some antibiotic; correct?

[10] A: Yes.

[11] Q: And there was no indication in this article that Barry
[12] Hall was employing Intelligent Design principles;
[13] correct?

[14] A: That's right. I noted that in my report.

[15] Q: And you have no reason to believe that Barry Hall has
[16] any affection for Intelligent Design; do you?

[17] A: No. But I would point out that Barry Hall is one
[18] person. And that if more people had reason to doubt
[19] that Evolution could do large changes in bacteria, then
[20] maybe there would be a hundred times as many people
[21] searching for such things.

[22] Maybe people would have more confidence that such
[23] a program of action would be fruitful.

[24] Q: But so far as we know, Barry Hall didn't need the
[25] illumination of Intelligent Design to look for exactly

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[1] the type of thing you would like to see him looking for?

[2] A: He did not need the illumination of Darwin Evolution or
[3] Intelligent Design to do what he is doing.

[4] Q: He didn't need Intelligent Design?

[5] A: He didn't need a lot of different things.

[6] Q: In fact, you say he didn't need Darwinian Evolution, but
[7] in fact, his article discusses Evolution including the
[8] Evolution that had occurred to date for this particular
[9] bacteria?

[10] A: He didn't need the thesis that Darwinian Evolution can
[11] produce complex molecular machinery, that it can do
[12] sophisticated tasks.

[13] Q: But you are talking about how Intelligent Design can
[14] contribute to the develop of antibiotics. I think we
[15] are agreeing that Barry Hall was able to do the very
[16] same things you would like to see done in the
[17] development of antibiotics through the benefit of
[18] Intelligent Design without using Intelligent Design
[19] principles at all; is that fair?

[20] A: That's correct.

[21] MR. WHITE: At this point, we are just going to
[22] end. You have gone over by like twenty minutes.

[23] MR. ROTHSCHILD: You just said five minutes ago we
[24] are going to have an hour. I am very close to being
[25] done.

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[1] MR. WHITE: But you didn't guarantee me anything.

[2] MR. ROTHSCHILD: I am not going to guarantee you
[3] anything because there's the issue of the rebuttal
[4] reports. If you allow me to finish, you can have a
[5] higher degree of confidence that I'm not going to ask
[6] you to come back.

[7] I am not going to promise you anything. We got
[8] the rebuttal reports two days ago. I am not criticizing
[9] anybody for that.

[10] Ed, you can take whatever position you want. But
[11] when you get in the middle of the deposition of Ken
[12] Miller and you want fifteen extra minutes, I don't think
[13] you are going to want to set this precedent.

[14] MR. WHITE: I am not setting a precedent now. I

[15] just want some assurances from you that we are not going
[16] to be going way over board here.

[17] MR. ROTHSCHILD: I am not going overboard.

[18] MR. WHITE: I will give you a reasonable amount of
[19] time.

[20] MR. ROTHSCHILD: I think you will be rewarded.

[21] MR. WHITE: Before you told me all these things
[22] were going on, but it turned out they weren't going on.

[23] MR. ROTHSCHILD: Let's take a three-minute break,
[24] and I should be able to wrap up.

[25] MR. WHITE: Okay.

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(1) (A recess was taken.)

(2) AFTER RECESS

(3) BY MR. ROTHSCHILD:

(4) Q: In the statement that is read to the Dover students, the
(5) students are told that Darwin's Theory is a theory, not
(6) a fact?

(7) A: And I am afraid I have lost that.

(8) Q: I don't even know if I have given it to you.

(9) A: Okay.

(10) Q: I am just going to read it to you. One of the things
(11) that is stated is Darwin's Theory is a theory, not a
(12) fact?

(13) A: Yes.

(14) Q: As a scientist, does that statement have any
(15) significance to you?(16) A: Yes, it means that Darwin's Theory is a proposed
(17) explanation to explain some data that we have at hand.

(18) Q: Many facts; right?

(19) A: Well, yes. It's applied to many different things, yes.

(20) Q: Would you agree that there is no greater degree of
(21) certainty or more information that would allow Darwin's
(22) Theory to graduate to a fact?(23) A: Yes. Theories are not facts. Facts are not theories.
(24) They are a separate thing. However as I state in one of
(25) my rebuttal reports, a number of Darwinians have claimed

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(1) fact hood for the theory.

(2) In particular, Michael Ruse, who is a Professor of
(3) the Philosophy of Biology, who is now at Florida State
(4) University, famously wrote in one of his books that
(5) Evolution is a — quote — fact, fact, Fact with greater
(6) emphasis on the last two facts, italicizing the second
(7) one, italicizing and capitalizing the last one.(8) So while I understand that his theory is not a
(9) fact, people who read such assertions as Michael Ruse
(10) makes — and other people have made similar assertions
(11) — might be confused about the status of Darwin's
(12) Theory.(13) Q: Is it safe to say Michael Ruse is not teaching biology
(14) to Dover high school students?(15) A: He is not, but other people whose work is drawn upon
(16) in biology textbooks have said similar things.(17) Q: Are you aware of whether in the biology textbook used by
(18) Dover students the assertion Evolution is a fact is
(19) made?(20) A: I am not, but I assume they get information about
(21) Evolution from other sources as well.(22) Q: Okay. But you don't know anything about how Evolution
(23) is taught at Dover High School; is that fair?

(24) A: That's correct.

(25) Q: And putting aside all these things said by the Michael

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(1) Ruse's of the world, this statement that Evolution is a
(2) theory, not a fact is really not a meaningful scientific
(3) assertion; is it?(4) A: I think it is a useful clarification of terms for things
(5) that often times get confused even by professional
(6) academics interested in Darwinian Evolution.(7) Q: Is there any reason to distinguish Darwinian Evolution
(8) from anatomic theory or germ theory on the issue of
(9) theory, not a fact; none of those are facts, right?

(10) They are theories.

(11) A: What is germ theory? Can you tell me exactly?

(12) Q: You don't know what germ theory is?

(13) A: I asked you first.

(14) Q: You don't get to ask questions.

(15) MR. WHITE: I object because your question is
(16) vague.

(17) A: I have never seen germ theory written out.

(18) BY MR. ROTHSCHILD:

(19) Q: Let's use anatomic theory.

(20) A: Okay. And the question is again?

(21) Q: You would characterize anatomic theory as a theory, not a
(22) fact; correct?

(23) A: That's correct.

(24) Q: And similar to Evolution, there isn't something that
(25) would cause anatomic theory to be recharacterized as a

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(1) fact; is that fair?

(2) A: That's correct.

(3) Q: And can you think of any reason why it is necessary to
(4) point out to students in a statement that Evolution is a
(5) theory, not a fact, but not do the same for other
(6) theories that they are being presented in their
(7) classroom?(8) A: Yes, I can think of several reasons. One is that
(9) prominent evolutionary biologists, as well as
(10) philosophers of science who should know better, have in
(11) fact stated strongly and publicly that Evolution is a
(12) fact, fact, fact.(13) And although it may not — their statements may
(14) not be found in the high school of Dover, the teachers
(15) there might easily realize that students could come
(16) across such statements in other venues and be considered
(17) that they have a proper understanding of what Evolution
(18) is.(19) And the second reason is that Darwin's Theory is
(20) completely different from other theories in science,
(21) such as anatomic theory, or germ theory, or the theory of
(22) gravity because many people in many places, many
(23) academics and others have made sweeping statements that
(24) it has implications far and wide beyond biology.

(25) It affects not only biological systems, it affects

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(1) how we view ourselves. It can be interpreted to tell us
(2) how we should form our political systems, how we should
(3) interpret works of literature which I discuss in one of
(4) my rebuttal reports.
(5) For atomic theory, it has never been stated that
(6) atomic theory allows a person to be an intellectually
(7) fulfilled atheist, but that has been made — that claim
(8) has been made for Darwin's Theory by a prominent
(9) evolutionary biologist by the name of Richard Dawkins.
(10) A philosopher of biology whose names escapes me
(11) now wrote an article in the Journal of Biology and
(12) Philosophy saying that Darwinism makes nihilism a
(13) conclusion. It implies nihilism.
(14) A philosopher of biology by the name of Daniel
(15) Dennet has called Darwin's Theory a universal acid which
(16) dissolves our most cherished beliefs.
(17) A political philosopher by the name of Larry
(18) Arnhart has written a book called Darwinian Natural
(19) Right in which he claims that Darwinian Theory supports
(20) a conservative political view of governance.
(21) A man named Peter Singer at Princeton University
(22) has written a book called A Darwinian Left where he
(23) argues that Darwinism implies a liberal theory of
(24) governance.
(25) Kenneth Miller, an expert witness for the

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(1) plaintiffs, has written in his own textbook Biology that
(2) Darwin's Theory leaves no intellectual endeavor — I am
(3) paraphrasing — untouched. That it is a sweeping
(4) theory.
(5) Another witness for — another expert witness for
(6) the plaintiffs John Haught has written several books on
(7) the theological implications of Darwin's Theory.
(8) For no other theory in science are such sweeping
(9) claims made. And I think it is a very rational position
(10) to say for a theory for which such sweeping claims are
(11) made, one should be very careful with the students to go
(12) over exactly what the evidence shows, how it is limited
(13) and other such things.
(14) So I think it is completely justifiable to pick —
(15) to make all these extra efforts with Darwin's Theory and
(16) not for other theories.
(17) MR. WHITE: We are done. We have gone over a half
(18) hour.
(19) MR. ROTHSCHILD: I didn't ask for that ten minute
(20) speech. Let me finish my questions.
(21) MR. WHITE: This is the last line of questioning.
(22) BY MR. ROTHSCHILD:
(23) Q: Would you agree that all statements that you just
(24) recited are philosophical or metaphysical or political
(25) interpretations of Darwin's Theory and not scientific

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(1) statements?
(2) A: Yes, they go well beyond biology.
(3) Q: They are not scientific statements?
(4) A: I think they are claims about a scientific theory that
(5) students are likely to encounter.
(6) Q: Please answer my question so we can finish. Are they
(7) scientific? Are they scientific statements?
(8) A: No, they are not.
(9) MR. ROTHSCHILD: I have no further questions.
(10) (The deposition was concluded at 6:15 p.m.)
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COMMONWEALTH OF PENNSYLVANIA :
COUNTY OF CUMBERLAND :
I, Vicki L. Fox, Reporter and Notary Public in and
for the Commonwealth of Pennsylvania and County of
Cumberland, do hereby certify that the foregoing
testimony was taken before me at the time and place
hereinbefore set forth, and that it is the testimony of:
MICHAEL BEHE

I further certify that said witness was by me duly
sworn to testify the whole and complete truth in said
cause; that the testimony then given was reported by me
stenographically, and subsequently transcribed under my
direction and supervision; and that the foregoing is a
full, true and correct transcript of my original
shorthand notes.

I further certify that I am not counsel for nor
related to any of the parties to the foregoing cause,
nor employed by them or their attorneys, and am not
interested in the subject matter or outcome thereof.
Dated at Camp Hill, Pennsylvania, this 22nd day of
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Vicki L. Fox

Reporter - Notary Public

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